SECOND EDITION

STRATEGIC STUDIES
A READER

EDITED BY
THOMAS G. MAHNKEN AND
JOSEPH A. MAIOLO

ROUTLEDGE

Strategic Studies

The second edition of *Strategic Studies: A Reader* brings together key essays on strategic theory by some of the leading contributors to the field. This revised volume contains several new essays and updated introductions to each section.

The volume comprises hard-to-find classics in the field as well as the latest scholarship. The aim is to provide students with a wide-ranging survey of the key issues in strategic studies, and to provide an introduction to the main ideas and themes in the field. The book contains six extensive sections, each of which is prefaced by a short introductory essay:

- The uses of strategic theory
- Interpretation of the classics
- Instruments of war, intelligence and deception
- Nuclear strategy
- Irregular warfare and small wars
- Future warfare, future strategy

Overall, this volume strikes a balance between theoretical works, which seek to discover generalizations about the nature of modern strategy, and case studies, which attempt to ground the study of strategy in the realities of modern war.

This new edition will be essential reading for all students of strategic studies, security studies, military history and war studies, as well as for professional military college students.

Thomas G. Mahnken is currently Jerome E. Levy Chair of Economic Geography and National Security at the US Naval War College. He is also a Visiting Scholar at the Philip Merrill Center for Strategic Studies at The Johns Hopkins University's Paul H. Nitze School of Advanced International Studies (SAIS).

Joseph A. Maiolo is Professor of International History in the Department of War Studies, King's College London, UK.

'A brilliant and, unlike most edited collections, coherent collection of essays by masters past and present on the theory and practice of strategy. A superb primer for any and all students of the subject.' *Eliot A. Cohen, School of Advanced International Studies, Johns Hopkins University, Washington, DC*

'This superb volume provides an essential primer for any student of strategic studies.' *Theo Farrell, Kings College, London*

'By a wide margin this is the premier Reader in the field of strategic studies. For research as well as teaching, it is an invaluable resource.' *Colin S. Gray, University of Reading*

'A fine collection of strategic thought.' *Journal of Military History*

'An essential text for anyone interested in the development of strategic ideas.' *Stephan Fruehling, Australian National University, Canberra*

'The new volume makes an excellent contribution to the study of strategy, and to the ongoing debate on the complexity of strategy and the connection between security and strategy. It is also a great and highly recommended teaching tool for advanced course on strategic studies.' *Mohiaddin Mesbahi, Florida International University*

Strategic Studies

A Reader

Second Edition

Edited by Thomas G. Mahnken and Joseph A. Maiolo

Routledge
Taylor & Francis Group

Contents

Acknowledgements

General introduction to the second edition

Events since the publication of the first edition of this Reader have only emphasized the relevance of war and strategy in the modern world. The wars in Iraq, Afghanistan, Georgia and Libya; territorial disputes in the South China and East China seas, as well as the continuing possibility of conflict on the Korean Peninsula, in the Persian Gulf and across the Taiwan Strait, all demonstrate that force remains an instrument of statecraft and emphasize the importance of strategic thought and action.

At the same time, war appears to be taking new forms. Since the early 1990s, theorists and practitioners have been arguing that we are in the early phases of a Revolution in Military Affairs (RMA) brought on by the development and diffusion of precision-strike weaponry. Moreover, recent years have seen growing debates over the effects and effectiveness of cyber operations. The Chinese military has embraced both precision-guided weaponry and information operations, and both figure prominently in Chinese writings on future warfare. In addition, Russia's increasing reliance on nuclear weapons, China's nuclear modernization, North Korea's demonstration of its nuclear capability, and continued suspicion that Iran would like to follow suit, demonstrate that nuclear weapons (and nuclear strategy) remain a concern.

In a world in which so much about the character and conduct of war appears to be changing, an understanding of the theory of war reminds us that the nature of war does not change. Moreover, an understanding of the enduring nature of war can help us focus on its changing character and conduct.

Theory offers the student of strategy a conceptual toolkit to analyse strategic problems. An understanding of theory equips the student with a set of questions to guide further study. As Carl von Clausewitz wrote, the purpose of theory is not to uncover fixed laws or principles, but rather to educate the mind. As he put it:

> [Theory] is an analytical investigation leading to a close *acquaintance* with the subject; applied to experience – in our case, to military history – it leads to a thorough *familiarity* with it … Theory will have fulfilled its main task when it is used to analyze the constituent elements of war, to distinguish precisely what at first sight seems fused, to explain in full the properties of the means employed and to show their probable effects, to define clearly the nature of the ends in view, and to illuminate all phases of warfare in a thorough critical inquiry. Theory then becomes a guide to anyone who wants to learn about war from books; it will light his way, ease his progress,

> train his judgment, and help him to avoid pitfalls … It is meant to educate the mind of the future commander, or, more accurately, to guide him in his self-education, not to accompany him to the battlefield; just as a wise teacher guides and stimulates a young man's intellectual development, but is careful not to lead him by the hand for the rest of his life.[1]

In other words, we study strategic theory in order to learn how to think strategically.

Because the stakes in war are so high, strategy is a supremely practical endeavour. The most elegant theory is useless if it lacks practical application. Strategic theory thus succeeds or fails in direct proportion to its ability to help decision makers formulate sound strategy. As the twentieth-century American strategist Bernard Brodie put it, "strategy is a field where truth is sought in the pursuit of viable solutions."[2]

On strategy

Because strategy is about how to win wars, any discussion of strategy must begin with an understanding of war. As Clausewitz famously defined it, "war is thus an act of force to compel our enemy to do our will."[3] Two aspects of this definition are notable. First, the fact that war involves force separates it from other types of political, economic and military competition. Second, the fact that war is not senseless slaughter, but rather an instrument that is used to achieve a political purpose, differentiates it from other types of violence.

Strategy is, or rather should be, a rational process. As Clausewitz wrote, "No one starts a war – or rather, no one in his senses ought to do so – without first being clear in his mind what he intends to achieve by that war and how he intends to conduct it."[4] In other words, success in war requires a clear articulation of political aims and the development of an adequate strategy to achieve them. Clausewitz's formulation acknowledges, however, that states sometimes go to war without clear or achievable aims or a strategy to achieve them. As Germany demonstrated in two World Wars, mastery of tactics and operations counts for little without a coherent or feasible strategy.[5]

Successful strategy is based upon clearly identifying political goals, assessing one's comparative advantage relative to the enemy, calculating costs and benefits carefully, and examining the risks and rewards of alternative strategies. The purpose of strategy is ultimately to convince the enemy that he cannot achieve his aims. As Admiral J.C. Wylie wrote,

> the primary aim of the strategist in the conduct of war is some selected degree of control of the enemy for the strategist's own purpose; this is achieved by control of the pattern of war; and this control of the pattern of war is had by manipulation of the centre of gravity of war to the disadvantage of the opponent.[6]

Military success by itself is insufficient to achieve victory. History contains numerous examples of armies that won all the battles and yet lost the war due to a flawed strategy. In the Vietnam War, for example, the US military defeated the Viet Cong and

North Vietnamese Army in every major engagement they fought. The United States nonetheless lost the war because civilian and military leaders never understood the complex nature of the war they were waging and were thus unable to develop an effective strategy. Conversely, the United States achieved its independence from Britain despite the fact that the Continental Army won only a handful of battles.[7]

It is worth emphasizing that the primacy of politics applies not only to states but also to other strategic actors. As Al Qaeda's leader Ayman al-Zawahiri wrote in his book *Knights Under the Prophet's Banner*:

> If the successful operations against Islam's enemies and the severe damage inflicted on them do not serve the ultimate goal of establishing the Muslim nation in the heart of the Islamic world, they will be nothing more than disturbing acts, regardless of their magnitude, that could be absorbed and endured, even if after some time and with some losses.

Clausewitz would doubtless approve of Zawahiri's understanding of strategy, if not his goals.

Just as it would be wrong to view war as nothing more than slaughter, it would be misleading to believe that force can be used in highly calibrated increments to achieve finely tuned effects. War has its own dynamics that makes it an unwieldy instrument, more a bludgeon than a rapier. Interaction with the adversary makes it difficult to achieve even the simplest objective. As Clausewitz reminds us, "War is not the act of a living force upon a lifeless mass but always the collision of two living forces."[8] In other words, just as we seek to use force to compel our adversary to do our will, so too will he attempt to use force to coerce us. Effectiveness in war thus depends not only on what we do but also on what an opponent does. This interaction limits significantly the ability to control the use of military force.

About this volume

This Reader brings together works on strategic theory by some of the leading contributors to the field. It includes a mixture of hard-to-find classics as well as the latest scholarship. It is meant to be of use to both students and practitioners of strategy. It is also meant to be interdisciplinary, of interest both to historically minded political scientists as well as theoretically minded historians.

Our intention in assembling this collection is to guide readers through a wide-ranging survey of the key issues in strategy. In making our choices we have attempted to strike a balance between theoretical works which seek to discover robust generalizations about the nature of modern strategy, pertinent historical studies which attempt to ground the study of strategy in the realities of modern war, and extracts from classic works by writers such as Sun Tzu and T.E. Lawrence. No doubt some readers will be surprised to see one of their favourites omitted and some issues neglected. Inevitably, for reasons of space, the editors could not include all the essays and issues they would have ideally wanted. Nonetheless, we feel that this collection offers students a balanced starting point for the serious study of strategy.

Contributors to this volume come from a wide variety of backgrounds. They represent a diversity of academic disciplines: from mathematics to history, from economics to anthropology. As a result, students will encounter in this anthology a wide variety of writing styles and methodologies, which reflects the importance of strategy as scholarly discipline and real-world preoccupation.

The Reader is divided into six Parts. Each Part begins with a brief synopsis of the included works and some background material to provide context, as well as suggestions for further reading. To help students focus while reading, we have also provided a list of study questions. Readers should also note that in addition to our suggestions for further reading, the notes of the works reproduced here are a valuable bibliographic source.

Part I of the collection begins by discussing the role of strategic theory and history for theorists, policy makers and professionals. It also discusses the use and abuse of strategic theory and history.

Part II contains a set of essays that interpret, and reinterpret, classical strategic theory. It includes excerpts from some of the classic texts of strategic theory by Sun Tzu, Liddell Hart and Schelling, as well as Michael Handel's guide to interpreting Clausewitz's masterpiece *On War*.

Having discussed strategic theory holistically, Part III contains essays that explore some sea and air power. The essays are meant to provide the reader with a better understanding of what each of these instruments can – and cannot – accomplish. Part III also contains essays about the role of intelligence and deception in warfare.

Part IV builds on the previous two parts by exploring the extent to which the advent of nuclear weapons changed the theory and practice of strategy. It includes classics by Bernard Brodie and Albert Wohlstetter, as well as a recent essay by Sarah Kreps and Matthew Fuhrmann exploring the effectiveness of military efforts to prevent nuclear proliferation.

Part V explores irregular warfare, including small wars and hybrid wars.

Part VI addresses issues of future warfare and strategy. The works included address the debate about revolutions in military affairs and offer some insight into how strategists should approach the daunting challenge posed by the future. Are there enduring principles of strategy that future strategists neglect at their peril, or does the changing nature of warfare also transform the fundamentals of strategy?

Notes

1   Carl von Clausewitz, *On War*, edited and translated by Michael Howard and Peter Paret (Princeton, NJ: Princeton University Press, 1989), 141.
2   Bernard Brodie, *War and Politics* (New York: Macmillan, 1973), 452–3.
3   Clausewitz, *On War*, 75.
4   Ibid., 579.
5   David Stevenson, *1914–18: The History of the First World War* (London: Penguin Books, 2005); Karl-Heinz Frieser, *The Blitzkrieg Legend: The 1940 Campaign in the West* (Annapolis, MD: Naval Institute Press, 2005).
6   J.C. Wylie, *Military Strategy: A General Theory of Power Control* (Annapolis, MD: Naval Institute Press, 1989), 77.
7   Andrew F. Krepinevich, Jr., *The Army and Vietnam* (Baltimore, MD: The Johns Hopkins University Press, 1986); Piers Mackesy, *The War for America, 1775–1783* (Rutgers: University of Nebraska Press, 1993).
8   Clausewitz, *On War*, 4.

Part I

The uses of strategic theory

Introduction

The three essays in Part I offer readers an important point of departure for the exploration of strategic studies. All three authors share the view that strategy is more than the practical application of a few common-sense rules of thumb about the use of military means to achieve political ends; that strategy should be studied methodically and that it has a place among the scholarly pursuits; and that useful strategic knowledge demands that present-day theorists think rigorously about "the lessons" of past wars and history more generally.

In the first essay reproduced in Part I, Sir Lawrence Freedman of King's College London draws on insights from political science and sociology to examine the most fundamental underlying concept of strategic studies: namely, the concept of "power". Although power is often measured in terms of assets (men, money, hardware, etc.), power should be understood as a relationship between opposing wills. As Freedman defines it, "power is the capacity to produce effects that are more advantageous than would otherwise have been the case". To illustrate, Freedman turns to deterrence theory: A deters (or exercises power over) B, when B modifies its behaviour in response to A's threats. As anyone familiar with international relations knows, however, deterrence relationships are in practice never straightforward. B may not perceive the threat or respond in the way intended by A. The complexities of politics and psychology conspire to frustrate the exercise of power, especially when it requires the continual application of force. Put simply, B will always seek ways to subvert A's control. Although for these reasons any exercise of power is inherently unstable, power at its most stable is achieved when B accepts A's will in the form of authority. What Freedman's analysis suggests is that an understanding of power relevant to strategic studies must encompass more than "control" through "force". Strategy, he writes, is "the art of creating power to obtain the maximum political objective using available military means".

While Freedman offers insights into the methodology of strategic studies and the central concept of power, the second essay reproduced here examines the way in which strategic thinkers have used and abused history. William C. Fuller, Jr. of the US Naval War College disputes the accepted wisdom that armed forces routinely ignore the "lessons" of prior wars. Even the most cursory survey shows that nations and their armed forces have constantly striven to learn from past experience. The real problem, as Fuller

sees it, is not a lack of interest in historical lessons, but instead the problem of knowing what "the lessons" are and how to embrace them. He sets out the typical styles of extracting military lessons and the pitfalls associated with them, specifically the fallacies of the "linear projection" and the "significant exception". Strategists fall for the first of these by rigidly predicting future military outcomes from those of the immediate past; strategists fall for the second when they explain away prior military experiences that do not conform to the existing model of war as "significant exceptions". These two fallacies occur because military organizations prefer steady incremental change to radical transformation, and because they often prefer to prepare for the wars they want to fight instead of the ones that they may actually be more likely to fight. What Fuller's analysis shows is that the whole concept of a "military lesson" is dubious and potentially dangerous. Although military organizations can learn much from wars of the past, useful "military lessons" are short-lived because of the interactive nature of war. After all, future adversaries may find a way to creatively exploit a strategy based on prior experience, or may simply learn precisely the same lesson, and so produce a frustrating strategic stalemate.

The final essay takes strategic studies to the level of its application. As Colin S. Gray of the University of Reading points out, much of what appears to be wise and even prudent in theory is often unhelpful to the hapless military officer who is tasked with drawing up a feasible strategy and then executing it. Strategy is difficult to put into practice because it is neither policy making nor combat. Talent in one or the other field, as Gray writes, does not make one a good strategist. Good strategists, Gray suggests, are born rather than trained. Strategy is difficult because war itself is an extraordinarily complex activity in which everything that can go wrong will. Even the most high-tech communication and intelligence systems, for instance, cannot dispel what Clausewitz (see Michael Handel's essay in Part II) called the fog and friction of war, or anticipate how a foe will act to frustrate even the most brilliantly conceived and executed strategy.

Study questions

1   What is strategy?
2   What is "power"? And how does the definition offered by Freedman shape your understanding of strategy?
3   Is strategy an "art" or a "social science"?
4   Are historical "lessons" a reliable guide for future strategy?
5   Why is strategy difficult?

Further reading

Betts, Richard K., "Is Strategy an Illusion?", *International Security* 25, no. 2 (2000), 5–50.
Brodie, Bernard, "Strategy as a Science", *World Politics* 1, no. 4 (1949), 467–488.
Brodie, Bernard, *Strategy in the Missile Age* (Princeton, NJ: Princeton University Press, 1959).
Fearon, James, "Rationalist Explanations for War", *International Organization* (summer 1995), 317–414.
Fischer, David Hackett, *Historians' Fallacies* (London: Routledge, 1971).
Gat, Azar, *A History of Military Thought: From the Enlightenment to the Cold War* (Oxford: Oxford University Press, 2002).

Gooch, John, "Clio and Mars: The Use and Abuse of History", *The Journal of Strategic Studies* 3, no. 3 (1980), 21–36.

Howard, Michael, *The Causes of War* (London: Ashgate, 1983).

Lanir, Zvi, "The 'Principles of War' and Military Thinking", *The Journal of Strategic Studies* 16, no. 1 (1992), 1–17.

McIvor, Anthony D., ed., *Rethinking the Principles of War* (Annapolis, MD: US Naval Institute Press, 2005).

This page intentionally left blank

1 Strategic studies and the problem of power

Lawrence Freedman

I

> 'The strategic approach' is . . . one which takes account of the part played by force, or the threat of force in the international system. It is descriptive in so far as it analyses the extent to which political units have the capacity to use, or to threaten the use of armed force to impose their will on other units; whether to compel them to do some things, to deter them from doing others, or if need be to destroy them as independent communities altogether. It is prescriptive in so far as it recommends policies which will enable such units to operate in an international system which is subject to such conditions and constraints.[1]

Michael Howard has throughout his career served as one of the most eloquent and lucid exponents of the strategic approach. He was outlining his own creed when he described classical strategists as

> the thinkers who assume that the element of force exists in international relations, that it can and must be intelligently controlled, but that it cannot be totally eliminated.[2]

In that essay, first published in 1968, he concluded by wondering whether classical strategy as a self-sufficient study still had any claim to exist. The field was then dominated by the inputs of political scientists, physical scientists, systems analysts, and mathematical economists and a grasp of modern military technology appeared, above all, to be of central importance for those seeking to make sense of the great—and largely nuclear—strategic issues of the day. During the next decade, as the costs of allowing a preoccupation with technology to crowd out the traditional themes of strategic thought and as the limitations of the sophisticated methodologies developed in the United States become painfully apparent, Howard's confidence in a classical approach returned, suitably modified to take account of the rate of technological advance.[3]

It is only in recent decades that the study of strategy has become academically respectable. After the Great War, for many the only reason to study war was in order to design an international order in which disputes would be settled without resort to arms. It was

only when Quincy Wright produced his monumental *The Study of War*, that the virtue of serious empirical analysis became acknowledged.[4]

Historians sustained the study of the ebb and flow of political life, with diplomatic historians undertaking this responsibility for international affairs. However, even here, until well into this century, the role of military force as a political instrument was studied only in the most general terms. Diplomatic historians were of course interested in the threat of force and its application in particular instances, but they rarely descended into issues of tactics and logistics.

Only those close to the military establishment saw virtue in the study of strategy. They produced campaign histories and tried to search for principles of strategy with which to educate the officer corps. At best, as with Clausewitz, practitioners understood the relationship between war and the character of the societies fighting them: at worst, there was little interest in anything other than tips on the conduct of battle. As Bernard Brodie observed, 'Some modicum of theory there always had to be. But like much other military equipment, it had to be light in weight and easily packaged to be carried into the field.'[5] Thus he noted the tendency to strip such theory as did emerge to its barest essentials and then convert it into maxims, or lists of the principles of war. Strategic theory, complained Brodie, thus became pragmatic and practical, unreflective of the framework in which the strategists were operating.

There was therefore prior to the start of the nuclear age no established framework for the academic study of military strategy. Diplomatic historians were aware of individual strategies; students of international relations understood why strategies were needed; military practitioners busied themselves with the design of strategies; political theorists and international lawyers sought to reorder the world so that strategy would be irrelevant.

The experience of the 1930s and 1940s knocked much of the idealism out of political and intellectual life. A world war followed so quickly by a cold war might have encouraged the study of strategy under any circumstances. The advent of nuclear weapons pushed questions of strategy right to the fore of political life, and once they were there it could not be long before the academic community would follow. Howard and Brodie were part of an emerging community of strategic thinkers who brought a variety of academic disciplines to bear on these great problems.

They, along with others generally drawn from the disciplines of history and politics, initially worried most as to the sense of nuclear strategy, doubting whether nuclear strength could be turned into a decisive military asset when faced with an adversary of some—even if inferior—nuclear strength. But East and West were acting and talking as if nuclear weapons had superseded all other types of weapons, and commitments to allies had been made on exactly this supposition. So the few classical strategists found themselves in a conundrum for which their intellectual traditions had left them unprepared. Into the breach stepped a new breed of strategists, often from schools of economics and engineering rather than politics and history, who sought to demonstrate how a wholly novel situation might be mastered by exploiting novel methodologies.[6]

Their approach derived its significance largely from their concentration on those features of the nuclear age which distinguished it from the exercise of military power in

pre-nuclear times. This inevitably led to the neglect of the traditional sources of military power. In addition, because so much of the intellectual attraction of the new methodologies derived from their abstract nature, the scenarios of future conflict explored made only a slight attempt to relate decision-making to any recognizable social and political context.

Almost by definition, should anything remotely resembling these scenarios ever come to pass, the political and social context would be utterly transformed. But many of the new strategists argued that to the extent that social forces and human passions must inevitably be in play their role should be minimized, for there would be a premium on cool, rational decision-making if there was to be any satisfactory result to a nuclear confrontation. Formal rationality not mass emotion must govern decisions. At most, the prospect of mass emotion might be used by the calculating manager to persuade his opponent that the time had come to strike a bargain.

It was almost an attempt to transform the exercise of political power by making it subject to the managerial revolution and so turn states into rational decision-makers, maximizing utilities. This analytical approach illuminated aspects of strategy that had not always been appreciated in the classical approach but it lacked the broad, historically tuned insight of the classicist. Meanwhile the classical strategists lacked a theoretical framework to help integrate the new analyses. It is not surprising that there has been a constant return to Clausewitz.

Michael Howard has been unusual in his attention to the need for a conceptual framework if the study of strategy is to progress. My concern in this essay is to explore the possibility that strategic theory can be taken further by investigating what must be one of its central concepts—power.

The classical approach starts with the state as the central unit of the international system, reflecting sovereignty, a capacity for independent action, and certain value-systems. States need strategy because they are vulnerable: they can be created or destroyed by armed force. Howard has always insisted that a concern with this dark side of the international system could never provide a total approach to international politics, but it was necessary to take care of it in order that the lighter side could glow. He has stressed the adverse consequences of following it too slavishly, for this could provoke conflicts rather than prevent them. The strategic approach must only be used in conjunction with other, more positive, approaches to the conduct of relations among states. However, so long as armed force remains a feature of the system it cannot be ignored.

The fact that military strategy must come to terms with force distinguishes it from those other forms of planning which are often described as strategic but which do not involve 'functional and purposive violence'. In one pithy definition Howard describes military strategy as 'organized coercion'.[7]

The ideal for the strategist might be to achieve a condition of 'pure coercion', when his will becomes irresistible, but the opportunities for this have been diminishing in the modern international system and so a state resorting to force as an instrument of policy must overcome an opposing, and armed, will.[8]

Thus, along with Beaufre, Howard sees strategy as a 'dialectic of two opposing wills'.[9] The stress on 'will' in an analysis of the meaning of strategy is important because it

provides a link with classic definitions of power, which Howard by and large follows, as referring to the ability to get one's way against a resistant opponent. In one essay he defines it as the ability of political units 'to organize the relevant elements of the external world to satisfy their needs'. As an attribute of a political unit this is normally described as a capacity. So strategic power becomes 'coercive capacity', which is elaborated elsewhere as 'the capacity to use violence for the protection, enforcement or extension of authority'.[10]

This understanding of power is central to the strategic approach. In this essay I wish to question whether it is adequate to the task. The elaboration of a satisfactory concept of power is a familiar endeavour among political theorists and the lack of an agreed definition has suggested that this is one of those 'essentially contested' concepts that defy definition because it can only be understood through a package of values and assumptions that are in themselves matters of fundamental dispute.[11]

In the first part of this essay I take a brief look at the concept of power in political theory as a means of raising some of the issues relevant to a discussion of how the concept has been and might be used in strategic theory. I then consider why this question has not been addressed as much as it might have been by the strategic studies community. Morgenthau's view of power provides a link between political theory and strategic theory, before a consideration of the insights that might be derived from contemporary strategic theory. In the final part I attempt to elaborate a concept of power relevant to strategic theory. Through this I seek to justify a definition of strategy as the art of creating power to obtain the maximum political objectives using available military means.

II

Although the intensive political science debate on this nature of power has been much more extensive and sophisticated than that in strategic studies it has still reached a dead end. This is not the place to survey the massive literature on power, but it is worth noting some features.

Much of the difficulty stems from the fact that the starting-point for most analyses of power—in political theory as much as strategic studies—is that it is an expression of the subject's will. This is reflected in different ways in three of the classic definitions of power: Thomas Hobbes, 'man's present means to any future apparent good';[12] Max Weber, 'the probability that one actor in a social relationship will . . . carry out his own will';[13] and Bertrand Russell—'the production of intended effects'.[14]

One of the key questions is whether power is only realized through conflict. Talcott Parsons, for example, sees power as a generalized capacity to seek group goals, and he stresses the extent to which these goals can be consensual and achieved by an accepted authority.[15] Those who disagree insist that this neglects the inherently coercive and conflictual dimensions of power. They are concerned that insufficient stress is given to the 'power over' questions as opposed to the 'power to'.[16]

There are many problems with the analysis of power in terms of 'power over'. Pluralist theorists, such as Dahl, sought to measure power by looking at the processes of decision-making and tended to discover that no one group had a monopoly of power in terms of

being able to get their way. This was vulnerable to the sort of critique developed by the more radical theorists such as Bachrach and Baratz, who pointed to the importance of successful non-decisions, that is the ability to get a set of interests enshrined in the unspoken and unchallenged consensus, as a critical indicator of power.[17] Power can be exercised by the creation of social and political institutions which ensure that only the most innocuous second-order issues ever come forward for decision. If the major questions relating to the distribution of resources and values in a society are successfully kept from political consideration then this is an effective exercise of power. So what is measured may not be very interesting.

Others have argued that power can be measured by looking at the distribution of resources and values, but that is open to the objection that the distribution may not have been intended and so cannot truly be said to be an exercise of power. Looking at the political hierarchy in search for 'power élites' also has its limitations, in that one élite may not always win on all issues, and that those in an apparently subordinate position may not be dissatisfied with the outcomes of the political process. Thus is it really an exercise of power if the effects were not intended? At the very least must one show that its exercise has made a difference?

Those who are most keen to find the sources of power have been those most anxious to seize them. The strategists with the most sensitive theories of power have been Marxist-Leninists because their theorizing has been closely linked with political action (praxis). Marxist theory has taken as its starting-point the existence of a conflict of interest between the ruling and working classes and seen its strategic task as being one of creating a consciousness of class oppression rather than using its own awareness of this to analyse inequality.

The difficulties of doing this have given Marxists a sense of the great variety of means by which people can be kept down. Concepts like hegemony, which are now so useful in understanding international relations, were first applied systematically by activist-theoreticians such as Gramsci[18] who were anxious to discover how it was that ruling groups could ensure passivity and compliance among the masses. The problem of seizing control of the state in conditions when all the odds were stacked in favour of the ruling group stimulated sustained strategic debate.

Marxists were least interested in decision-making in a bourgeois democracy, which they saw as part of the pretence by which ruling groups hid the realities of power from the masses. Rather they were interested in the processes by which mass consciousness became clouded by the ability of the ruling class to influence the way they saw political reality, and, at the other extreme, those historic, revolutionary moments when the masses rise to the challenge and attempt to take power.

From a variety of perspectives other political theorists have considered the relationship of power to authority on the one hand and force on the other. This link between power and authority is an important issue in much political theory, according to whether the two are considered to be exclusive or extensions of each other.[19] There is little doubt that the peaceful exercise of authority is much more satisfactory than the violent exercise of force when it comes to getting one's way. But how is that to be achieved? The trick of the powerful is to rule by encouraging the ruled to internalize the ruler's own values and interests.

III

Can strategists make a contribution to this debate? Strategic studies itself is not rich in theory. It appeals to the practical and the pragmatic. Much of the fascination of strategy is that it is concerned with politics at its most pure and raw—the pursuit of interests even where they conflict with those of others, the problems of anticipating the decisions of competitors or rivals when taking one's own, the attempt to manipulate and shape the environment rather than simply becoming the victim of forces beyond one's control.

As such it has long intrigued students of politics—Machiavelli is considered to be one of the founding fathers of modern strategy.[20] Arguably, it should be acknowledged as one of the central branches of political theory. Yet a preoccupation with strategy has often been considered slightly improper, perhaps because it requires regarding political life too much through the eyes of the practitioner. Academic political theory has been dominated by questions of order and justice. Even the study of power has often been about whether to exercise it can be moral, rather than how the concept can be refined to aid our understanding of the dynamics of political life.[21]

From a moral perspective strategy appears as subversive: it illuminates the means by which the drive for order is thwarted and the unjust can triumph. Meanwhile, more contemporary political analysis has sought to identify patterns and regularities in political systems that tend to deny the importance of the active element in political life.

The debate within political science on the concept of power which raged during the 1960s and 1970s[22] barely caused a ripple in the study of international politics, let alone strategic theory. Graham Allison's discovery of the limitations to rational decision-making in *Essence of Decision* mirrored without reference many of the arguments used by pluralist writers in their battle with the élite theorists.[23]

Yet there was a relevant intellectual tradition which influenced those coming to these questions from the broader study of international politics. Those working within the realist tradition had 'power' as the central concept and in general have defined it along established lines, stressing causation and the production of intended effects, and identifying it in terms of power over resources.[24]

Let us consider Hans Morgenthau's concept of power.[25] There is, with Morgenthau, as is often noted, a tension between his understanding of power as a means to ultimate ends, and power as an end in itself.[26] It must be to be some extent an end in itself. Unless one exercise of power is always different from another according to the ends being sought, the acquisition of power as a general capacity which can serve a variety of ends is a natural activity.

Power is directly related to political processes. Anything that can be achieved by natural means does not require power. Excluded from consideration are non-controversial interactions, such as extradition treaties. Morgenthau's concept of politics is thus very narrow—too narrow for most modern tastes. It is even more circumscribed in domestic affairs, where much more activity is shaped by non-political factors. In international affairs, without the social cement, much more is left to politics.

Yet while Morgenthau's understanding of politics is too narrow, his definition of power is intriguing:

> When we speak of power, we mean man's control over the minds and actions of other men . . .
>
> Thus the statement that A has or wants political power over B signifies always that A is able, or wants to be able, to control certain actions of B through influencing B's mind.

Thus the concept of power stresses 'the psychological element of the political relationship'. As such, it works through an expectation of benefits or a fear of disadvantage, or 'respect or love of a man or an office'. It involves orders, threats, and persuasion but also a recognition of authority or prestige, an aspect of international politics Morgenthau considered too often neglected.

This is distinguished from the actual exercise of physical violence. The threat of this violence is an intrinsic element of international politics, but when violence becomes an actuality, it signifies the abdication of political power in favour of military or pseudo-military power. Yet Morgenthau cannot separate the application of force from power because war has a political objective. War is a non-political means to a political end— the accumulation of power. 'The political objective of war itself is not per se the conquest of territory and the annihilation of enemy armies, but a change in the mind of the enemy which make him yield to the will of the victor.' Note here too the identification of realizing one's will as an expression of power.

There are obvious problems with the distinction between physical force and psychological power. The only time when one can truly enforce one's will is when one has achieved physical dominance. This is a problem to which I shall return.

What interests me for the moment is the consequence of the presumption that power is exercised through the mind of the target—it is in the mind of the beholder. This is a useful starting-point for any analysis of power, yet its immediate impact is to undermine two of the common assumptions with which many analyses start, and with which Morgenthau is often associated—that power is an asset to be accumulated and is achieved to the extent that one's will can be realized.

Once it is recognized that power can only be exercised through its impact on the subject's mind then it is accepted that it is relational and dependent upon the mental construction of political reality by the subject.

IV

This problem can be taken further by a consideration of deterrence theory, which, for strategic studies, has been the most thoroughly considered power relationship.[27] A standard definition is employed by George and Smoke: 'Deterrence is simply the persuasion of one's opponent that the costs and/or risks of a given course of action he might take outweigh its benefits.'[28] The definition makes it clear that the idea is to dissuade the opponent from initiating action rather than to *compel* him to do—or undo—something against his will, which distinguishes it from a more general definition of power.[29] However, it is by no means clear that the 'something' in question threatens the deterrer directly. The deterred may decide not to act in a particular way, even though this may have no direct bearing on the interests of the deterrer. The definition acknowledges that

the success of deterrence depends on the opponent being persuaded. No matter how sincere the deterrer might be in his conditional threats, if the opponent does not take these threats seriously then deterrence will fail.

If deterrence is in the eye of the beholder then the opponent may simply misapprehend the message that he is being sent and fail to act accordingly. The problem with designing deterrence strategies has therefore been to find ways of ensuring that the opponent receives the threat, relates it to his proposed course of action, and decides as a result not to go ahead as planned. The use in the definition from George and Smoke of the phrase 'costs and/or risks' recognizes that the opponent need not be convinced that the costs will definitely be imposed, only that there is a significant probability of this being so.

This peculiar quality of deterrence, with the opponent being persuaded *not* to do something, makes it very difficult to know whether in practice a deterrence relationship is in being. If the opponent is inactive this may be because he has no inclination to act, or, if he has been persuaded not to act, then this may be for reasons quite unconnected with the deterrer or from the particular character of deterrent threats.

This is often discussed as a problem for the deterrer. Is he wasting his time by making an effort to deter something that cannot be deterred or does not need deterring? How can he make his threats sufficiently credible to penetrate the mind-set of his opponent? Does this credibility depend on really being prepared to carry out the threat or merely conveying a sufficient probability that he just might?

But it is also a problem for the deterred. Is he missing an opportunity because of mythical fears about the possible consequences? The condition of paranoia, which is much discussed in the deterrence literature, is an obvious example of being influenced by fear of another which has little basis in reality. A deterrer can remain innocent of his influence on an opponent's calculations without the opponent losing his grip on reality. It is possible, indeed quite normal, to be persuaded against a particular course of action by the thought of how the target might respond. Prudence might dictate caution without the potential target being aware that he had ever been at risk. A would-be aggressor may thus be effectively deterred by an accurate assessment of the likely form of his potential victim's response without the victim having to do very much.

The phrase 'self-deterrence' is sometimes used to denote an unwillingness to take necessary initiatives as a result of a self-induced fear of the consequences. But all deterrence is self-deterrence in that it ultimately depends on the calculations made by the deterred, whatever the quality of the threats being made by the deterrer. So while much of the discussion of deterrence revolves around the problem of adopting it as a strategy, analytically it is important to recognize that it is as interesting to examine it from the perspective of the deterred as much as the deterrer.

Moreover, deterrence can seem far less problematic when we start from the point of view of the deterred. Once certain courses of action have been precluded through fear of the consequences should they be attempted, this conclusion may be institutionalized. It requires little further deliberation.

I noted earlier the focus of strategic studies on military means rather than political ends. The political ends are normally described in terms of obtaining conformity to the 'will' of the political unit. With unconditional surrender at the end of total war this may

be achieved, but with many conflicts where force is employed the outcome is much more messy and confused than this decisive objective would anticipate. Much of the strategic theory developed by such figures as Kahn and Schelling has discussed strategy in terms of an incomplete antagonism, by which elements of common interest can be influential even during the most intensive conflict, and has considered the conduct of the key players during the course of a conflict in terms of bargaining.

A bargain normally means an adjustment to ends. A less than perfect outcome is achieved but it is still the most that can be achieved. How then does this fit in with definitions of strategy which discuss it in terms of the search for appropriate means to achieve given ends—such as the much-used definition developed by Basil Liddell Hart, 'The art of distributing and applying military means to fulfil the ends of policy.'[30]

It is possible to discuss either military means or political ends in isolation from each other. That is what happens in much strategic studies, which turns into the most microscopic examination of means unrelated to any serious discussion of what ends might be served. Equally, many discussions of political ends are on a macroscopic scale and discussed without any consideration of whether they are at all feasible in practice.

A key aspect of strategy is the *interdependence* of decision-making. This does not only refer to the need to take the goals and capabilities of opponents into account. It must take in the need to motivate one's own forces by appealing either to their very personal goals of survival/comfort/honour or to their broader values, as well as the need to appeal to allies to throw in their lot with you. Equally, with allies, there is co-operation to achieve the overriding goal of the containment or defeat of the enemy, but as with the grand alliance during the Second World War, this can be combined with confrontation over the shape of the post-war settlement or competition for the hearts and minds of the liberated territories. Again, this requires some adjustment of both means and ends. In practice, strategic relations are *all* mixtures of co-operation, confrontation, and competition.

The interdependence of the decision-making means that effective strategy is based on a sound appreciation of the structure of the relationships involved and the opportunities it provides the various actors. It is necessary to anticipate the choices faced by others and the way that your action shapes those choices.

V

Where does this leave us with the analysis of power and strategy? The view that strategy is bound up with the role of force in international life must be qualified, because if force is but one form of power then strategy must address the relationship between this form and others, including authority.

The analysis of power has been dominated by a sense of hierarchy, as a relationship between a super-ordinate and a sub-ordinate. This seems to be accepted in strategic theory yet it is contradicted by the anarchic character of the international system and the lack of a supreme locus of power. If power resources are decentralized then power relationships cannot be simply hierarchical. It is further assumed that the atomized nature of the system produces regular clashes between individual units which, because they are not mediated through a complex social structure, are more likely to be settled through

force. While this Hobbesian view of the international system has been properly contra-dicted,[31] it does provide a contrary tendency to that in domestic politics in modern states with an authoritative government and many effective constraints against the regular use of force to settle conflicts.

It is hard to get away from a view of power as a capacity to produce effects. In my view, if it is insisted that these effects be 'intended and foreseen'[32] then in practice this is too restrictive. My definition of power is the *capacity to produce effects that are more advanta-geous than would otherwise have been the case*. How might this work as a concept?

A can oblige B to modify his behaviour through a successful application of force. In this case B's range of choice is physically restricted and his perceptions of A's power are reinforced through superior strength. However, it is normally preferable for A to encourage B to modify his behaviour through coercive threats (and also inducements). Best of all for A is if B does his bidding without question because he accepts A's authority. With all exertions of power other than *force majeure*, A's objective is to persuade B to change his preferred pattern of behaviour. In these cases an appreciation of power must start with B's understanding of his relationship with A.

Theorists normally give short shrift to the idea that power is an asset. Although we talk of the powerful, in practice we are talking of power resources. There is nothing automatic in their application: they can be squandered or exploited brilliantly. There is an art to politics. Yet if by looking at great strength we act cautiously with A then A has exerted power. *So power is a capacity that exists to the extent that it is recognized by others*. It is a perceived capacity that cannot be independent of what is perceived.

This does not require a distinction between power and brute force. Force is not some-thing different, merely the most extreme case when recognition of A's power becomes inescapable. Nor does power dissolve into authority at the other extreme. Authority is a form of power. If people do what you want because of awe or respect then that is the best form of power.

The perception of B may bear scant resemblance to the intention of A. The identifica-tion of power with the ability to achieve a desired effect, that is with *will*, ignores the problem that many of the effects involved are unintended or partial. It is one thing to demonstrate mastery over nature—quite another to demonstrate mastery over other wilful beings. It is rare in any social system for an actor to be able to disregard pressure of one sort or another, positive and negative, from all others, which would imply a complete monopoly of power. Even when A is in an unassailable position *vis-à-vis* B, B may still have potentials that cause A to modify his behaviour. There is a fundamental difference between the exertion of 'power over' nature or physical objects, and over other individuals or groups who also have a capacity of sorts.

In most social systems, even those marked by a high degree of conflict, individual actors participate in a multiplicity of political relationships. B does not simply need to modify his behaviour because of A but also because of C and D as well. Most decisions are complex and involve a variety of considerations involving other actors. *The more dense and complex the social structure the more difficult the exertion of power because B cannot attend only to the pressures from A.*

The greater the coherence within a political community the more likely it is that power will be exercised through authority. In modern, complex structures this will mean

that it has been institutionalized. For reasons that are familiar this is extremely difficult in international society but it has been achieved in some areas—for example Western Europe and North America. Conflict will develop within a political community to the extent that institutional forms leave one group feeling disadvantaged, and to the extent that it sees itself to be a distinct community on its own. This is the natural state of the international community. But it is moderated by awareness of a shared fate resulting from the costs of conflicts and the benefits of interdependence.

The two-way character of most political relationships and the complex character of most political systems mean that any exercise of power is manifestly unstable. It is, however, possible to go further and argue that *any exercise of power is inherently unstable.*

Let us examine this last point more fully. The ideal type towards which most discussions of power tend is of A wholly controlling B's fate. Suppose that A has captured B. A's most complete exercise of power would be to execute B immediately. But then the power relationship would cease to exist. Let us assume that A wishes only to imprison B. To start with B may be hopelessly cowed. Gradually he may find ways of not doing A's bidding. This may be no more than time-wasting. He may become aware that he is something of a prize for A and that A will eventually wish to exhibit him in a reasonable physical condition. He will also know that A cannot cope with a complete challenge to his authority and so he will begin to seek the limits of A's tolerance.

All this may be quite trivial and petty. In essential terms it may not matter. Despite all the irritations imposed on his captors, B is still taken and displayed. But multiply this relationship and the individual assertions of freedom at the margins can have a cumulative effect. A cannot provide a warden for every prisoner. The fewer he has, the greater the opportunity for conspiracies and acts of defiance. If control is lost completely then there might be a mass break-out.

Absolute control requires a continual application of force. It needs continual renewal. While for hard cases this may be found when necessary, in practice a more relaxed relationship will often be sought. Occupying forces will seek to do bargains with the victim populations—material goods, respect for religious symbols, etc. That is, they seek to reduce the coercive aspects of the relationships and seek to develop durable structures which soften the impact of conflict.

VI

This analysis may be able to help clarify the character of strategic activity.

The focus of strategic thinking must be the ability of a state to sustain itself. Much writing on strategy and international politics distinguishes the problems of the state in its external relations from the requirements of internal order. This is a false dichotomy. A state with problems in internal order is more vulnerable to external pressure—it is a supplicant, requiring powerful friends to put down insurgency and provide economic assistance. It is vulnerable to an unfriendly opponent stirring the pot a little.

Often problems of internal order at most require local police action. The complexity of social interactions in a modern society ensures a coherence that in itself deters secessionists and insurrectionists. However, this is by no means always the case. Many modern states are still at an early stage of development and are not based on any natural social

cohesion. They are agglomerations of nationalities or tribes who feel their greatest loyalty to the group rather than society at large.

We can thus distinguish between hard and soft states according to the degree of social cohesion and popular legitimacy which they enjoy. Hard states can be vulnerable externally. But strong national feeling is an important source of political strength.

The same distinction can be applied at the regional level. Western Europe is a strong sub-system, in that it is marked by a complex interdependence and shared values, while Eastern Europe may be weak. The potential for conflict tends to decline with the complexity of the social structure. None the less conflicts persist and strategy only comes into being when there is an antagonism of which all participants are aware. It is interesting to consider unconscious power relationships but they do not involve strategy.

While strategy may start with a visible conflict which will have to be decided by force the ideal resolution may be for A to turn his advantage into authority. The institutionalization of advantage so that it becomes reflected in consensus and procedure is the supreme achievement of strategy. Strategists specialize in situations in which force may be necessary, but a sole preoccupation with force misses the opportunities of authority. Although all power is unstable, that based on authority has a much longer half-life than that based on force.

Because in most cases, the power relationship between A and B is only one of a number in which both actors participate, B may have a variety of options as to how to respond to A's threats. In order to get B to produce the required behaviour A must gain B's attention and shape his construction of reality. This must depend on the coercive means at A's disposal, but to translate these means into effective power is an art rather than a science because of the need both to ensure that B does not use his own means to frustrate this effort and also to influence B's developing assessment of his own situation. This is always the case even in war. In the movement towards the decisive clash, B may be holding out all the time for a better peace settlement than unconditional surrender. Force may for a moment provide complete control but the instability of such control requires that either it is renewed continuously or else transformed, through the strategist's art, into authority.

In this sense *strategy is the art of creating power.* Power is unstable and subject to qualification. It does not always produce the preferred effects, but it produces more advantageous effects than would otherwise have been achieved.

Notes

1 Michael Howard, 'The Strategic Approach to International Relations', repr. in *The Causes of Wars* (London, 1983), 36.
2 Michael Howard, 'The Classical Strategists', repr. in *Studies in War and Peace* (London, 1970), 155.
3 See in particular 'The Relevance of Traditional Strategy' and 'The Forgotten Dimensions of Strategy', in *Foreign Affairs*, Jan. 1973 and Summer 1979 respectively. Both are reprinted in *The Causes of Wars*.
4 Quincy Wright, *The Study of War* (Chicago, 1942). (Abridged version edited by Louise Leonard Wright, Chicago, 1964.)
5 Bernard Brodie, *Strategy in the Missile Age* (Princeton, NJ, 1959) 21.
6 This is discussed in my *The Evolution of Nuclear Strategy* (London, 1981), esp. Section Five.
7 'The Relevance of Traditional Strategy', in *Causes*, 85.

 8 Ibid. 86.
 9 André Beaufre, *Deterrence and Strategy* (London, 1965), although he disagreed with Beaufre's tendency to extend the use of the term strategy.
10 'Morality and Force in International Politics', in *Studies*, 235; 'Ethics and Power in International Policy', in *Causes*, 61; 'Military Power and International Order', in *Studies*, 209.
11 W.B. Gallie, 'Essentially Contested Concepts', *Proceedings of the Aristotelian Society*, 56 (1955–6), 167–98. For a discussion of power along these lines see William E. Connolly, *The Terms of Political Discourse* (2nd edn.; Princeton, NJ, 1983).
12 Thomas Hobbes, *Leviathan*, parts 1 and II (Indianapolis, 1958), 78.
13 Max Weber, *Economy and Society*, ed. Guenther Roth and Claus Wittich (3 vols., New York, 1968), 53.
14 Bertrand Russell, *Power: A New Social Analysis* (London, 1938), 25.
15 Talcott Parsons, 'On the Concept of Political Power', *Proceedings of the American Philosophical Society*, 107 (1963), 232–62.
16 See Steven Lukes, *Power: A Radical View* (London, 1974).
17 Robert Dahl, *Who Governs? Democracy and Power in an American City* (New Haven, Conn., 1961); Peter Bachrach and Morton Baratz, 'The Two Faces of Power', *American Political Science Review*, 56 (Nov. 1962), 947–52.
18 A. Gramsci, *Selections from the Prison Notebooks* (London, 1971).
19 See John Hoffman, *State, Power and Democracy* (Sussex, 1988), pt. 2.
20 He is the first to be considered in Edward Meade Earle's *Makers of Modern Strategy* (Princeton, NJ, 1962).
21 This is one of the main preoccupations of Connolly, *Terms of Political Discourse*. It is interesting to note how much Howard has been preoccupied with this tension between 'morality and force' and 'ethics and power'. See n. 17.
22 For collections of materials on this debate see Marvin Olsen (ed.), *Power in Societies* (London, 1970) and Steven Lukes (ed.), *Power* (London, 1986).
23 Graham Allison, *Essence of Decision: Explaining the Cuban Missile Crisis* (Boston, Mass., 1971). For a critique along these lines see Lawrence Freedman, 'Logic, Politics and Foreign Policy Processes: A Critique of the Bureaucratic Politics Model', *International Affairs* (July 1976).
24 See for example Stanley Hoffman, 'Notes on the Elusiveness of Modern Power', *International Journal*, 30 (Spring 1975); David Baldwin, 'Power Analysis and World Politics', *World Politics*, 31 (Jan. 1979); Jeffrey Hart, 'Three Approaches to the Measurement of Power in International Relations', *International Organization*, 30 (Spring 1976).
25 I am basing this section largely on the excerpt from Hans Morgenthau, *Politics Among Nations*, repr. as 'Power and Ideology in International Politics', in James Rosenau (ed.), *International Politics and Foreign Policy* (New York, 1961), 170–2.
26 See Kenneth Waltz, *Man, the State and War: A Theoretical Analysis* (New York, 1959), 35.
27 This question is considered in more detail in Lawrence Freedman, 'In praise of general deterrence', *International Studies* (Spring, 1989).
28 Alexander George and Richard Smoke, *Deterrence in American Foreign Policy: Theory and Practice* (New York, 1974), 11.
29 A distinction is developed in the literature between *deterrence* and *compellance*—between 'inducing inaction and making someone perform'. It has been most fully elaborated by Thomas Schelling, *Arms and Influence* (New Haven, Conn., 1966), 175, 69 ff.
30 Basil Liddell Hart, *Strategy: The Indirect Approach* (London, 1967), 335.
31 Charles Beitz, *Political Theory and International Relations* (Princeton, NJ, 1979), 44.
32 Dennis Wrong, *Power: Its Forms, Bases and Uses* (London, 1988), 2.

2 What is a military lesson?

William C. Fuller, Jr.

'Those who do not learn the lessons of the past are condemned to repeat them.' This hackneyed statement, popularly but erroneously ascribed to George Santayana, ought of course to be paired with the comment of the German philosopher Hegel, which (in paraphrase) is that the one thing we learn from history is that nobody ever learns anything from history.[1] What can we or do we usefully learn from the experience of previous wars? This is a very important question, not least because if one contemplates the twentieth century, one notices almost immediately that a whole variety of military establishments compiled a dismal record at predicting the character of the next war – that is, at correctly forecasting the nature of the conflict they were to confront next.

Consider World War 1. Almost no one in Europe, with the exception of the obscure Polish-Jewish financier Ivan Bliokh, understood that World War I would be a protracted war of attrition and stalemate.[2] Nearly everybody else expected that the coming pan-European war would be short and decisive, over in a matter of months, if not weeks.[3] But the predictive skills of the leaders of the major powers did not improve later in the century. In 1940, for example, many Soviet leaders dismissed the idea that Germany could conduct a successful Blitzkrieg against the USSR, despite Hitler's campaigns in Poland and France.[4] Then, too, Japan, in preparing for a war against the United States in 1941 adopted a theory of victory that was utterly bizarre, that bespoke a fatal incomprehension of the US system of government and the temperament of its people.[5] Still later, the United States itself failed to anticipate the Vietnam War and arguably never grasped its essential character, even at its end.[6] Thus the Soviet Union also misunderstood the war on which it embarked in Afghanistan in 1979, with catastrophic results.[7] This list could be expanded almost effortlessly, although it would be both unedifying and depressing to do so.

The question naturally arises: *Why* was this the case? What explains why the military establishments of so many countries have been so badly wrong about the very thing that Clausewitz declared was their most important task? After all, in one of the best-known passages in *On War*, Clausewitz insisted that,

> the first, the supreme, the most far-reaching act of judgment that the statesman and commander have to make is to establish . . . the kind of war on which they are embarking; neither mistaking it for, nor trying to turn it into, something that is alien to its nature. This is the first of all strategic questions and the most comprehensive.[8]

Why, then, do military establishments get it wrong? An answer proposed by some is that the ability of the military to perceive the obvious is clouded over by an almost willful blindness. It has, for example, been maintained that the great European military powers contemptuously ignored the experience of the American Civil War, supposedly because, as Moltke apocryphally said, that war was merely a matter of two ragged militias chasing each other around a continent and consequently had no instructive value for the officers of the professional armies of civilized countries.[9] The 'lessons' of almost every war fought since are said to have been stupidly disregarded by one nation or another. This view – that military establishments have an uncanny capacity for overlooking the obvious – is still very much with us.

Take Colonel (Ret.) John Warden of the US Air Force, an important air power theorist of the past decade. In an influential essay he argues that:

> many vital lessons have flowed from isolated events in the past. The following are examples of lessons that should have been obvious at the time but were subsequently ignored, with great loss of life: the effect of the long bow on French heavy cavalry at Agincourt; the difficulty of attacking the trenches around Richmond; the carnage wrought by the machine-gun in the Russo-Japanese War; the value of the tank as demonstrated at Cambrai; and the effectiveness of aircraft against ships as shown by the sinking of the *Ostfriesland* in tests after World War I.[10]

Now Colonel Warden is, of course, trying to make a case for the importance of the lessons (or his version of the lessons) of the Persian Gulf War, which is the 'isolated event' to which he wants to call our attention. Yet his remarks here are problematic, not in the least because the examples he cites are not 'lessons' at all, but rather empirical observations (and frequently incorrect ones) about the efficacy of various weapons.[11] They are not prescriptive and tell us nothing about what to do (or what not to do), which a lesson *by definition* must. But a still greater objection can be made to Warden's implicit allegation that military establishments routinely ignore the experience of prior wars: it is demonstrably false.

For instance, it is simply not the case that Europeans dismissed the American Civil War; on the contrary, they studied it assiduously. G.F.R. Henderson's *Stonewall Jackson and the American Civil War* was a textbook at the British Staff College at Camberley for many years.[12] In Germany, there were a number of serving officers – among them Scheibert, Mangold, and Freydag-Loringhoven – who specialized in writing about the North American campaigns of 1861–65.[13] Even in Imperial Russia, at the beginning of the 1880s, the Tsar himself decreed a controversial (and extremely unpopular) reform of the entire Russian cavalry arm based upon his appreciation of the operations of 'Jeb' Stuart and Phil Sheridan.[14]

If European military elites did not ignore the American Civil War, they were even more eager to profit from the 'lessons' of their own recent conflicts. Consider the German Wars of Unification. The successes of Prussia and then Germany in 1866 and 1870, respectively, commanded the attention of the entire world. The armies of the other great powers, and even those of the smaller powers, attempted to analyze the factors that had produced German victory; there was an intense, even frenzied interest in studying and

if possible copying the most important features of Germany's military system. For instance, the Prussian advantage in numbers *vis-à-vis* France in 1870 was clearly a function of the Prussian practice of conscription, which led to the creation of large reservoirs of trained men. After all, Germany had been able to put 1.1 million troops into the field, while France could initially muster no more than 560,000. One form or another of conscription was adopted after the Franco-Prussian war by defeated France, Italy, Holland, and Tsarist Russia. Even Britain, which recoiled from conscription as alien to its traditions, still wanted to remain militarily competitive; the reforming Secretary of State for War, Edward Cardwell, used fear of Prussia to ram through Parliament a series of laws overhauling the British Army and abolishing finally the purchase of commissions by officers.[15]

Indeed, the reverberations of Prussia's victories were felt in areas of European life not obviously connected to the performance of armies and fleets. Bismarck's cryptic remark that 'the battle of Königgrätz was won by the Prussian schoolmaster' was interpreted to mean that efficiency in modern war depended on the intelligence and initiative of the troops.[16] It was not enough any more to have soldiers who behaved like automata, who did exactly what they were told, and displayed neither independence nor ingenuity. It was also believed that education could develop these traits. If it was unrealistic to expect that every soldier would be a graduate of an elementary school, at a bare minimum the corporals and sergeants – non-commissioned officers in general – would have to be educated men. 'Literate non-commissioned officers are a burning necessity for contemporary armies', wrote one Russian commentator in 1873.[17] As a result of this insight, governments throughout Europe took steps to make schools more numerous and accessible. The notion that popular education was somehow indispensable to national security put down roots, and it did so precisely because of the wars of German unification. What was true of the American Civil War and Bismarck's wars of unification in the mid-nineteenth century is equally true of every major war fought since, for military organizations have scrutinized them all in the hope of ascertaining their lessons.

Far from spurning the lessons of the past, most nations and their military establishments have, by contrast, evidenced an insatiate desire to assimilate them. In the US armed forces, for example, there are 'lessons-learned' databases; the army has a center for the study of lessons learned; and there are 516 volumes in the Naval War College Library that have the word 'lessons' in the title. What is true of the US military is true of other militaries. Moreover, it has been true for an extremely long time. Once Frederick the Great of Prussia happened to overhear some officers denigrate the value of studying past wars and military theory, maintaining instead that personal experience was the only source of military excellence. The king was moved to remark to them that he knew of two mules in the army's commissary corps that had served through 20 campaigns. 'Yet', added Frederick 'they are mules still.'[18]

It is hardly surprising that military organizations evince such profound curiosity about the so-called 'lessons' of the past; knowledge of military history can be construed as an inoculation against error and mistake in war, which at worst can produce defeat and at the very best can exact an extremely high cost in blood. It was Bismarck, after all, who observed that 'fools say they learn from experience. I prefer to profit by others' experience.'[19]

There are two components to the question of military lessons. The first is the problem of knowing what the lessons are. In Bismarck's terms, how are we to comprehend what are the precise elements of other people's experience that we ought to absorb? To extract useable lessons from the past, we have to interpret it, and interpretation can be skewed by prejudice, pre-conceptions, and tacit assumptions. The second problem concerns the action taken in response to this process of learning. The issue is one of receptivity – that is, the degree to which a military organization actually embraces a lesson in practice and alters the way in which it conducts business as a result.

Extracting military lessons

Three styles of interpreting or reading military history are pertinent to determining what the lessons of experience are. We might describe these as the antique (or pre-modern), the positivist, and the pragmatic.[20] The antique or pre-modern style of interpretation was dominant virtually everywhere until the middle of the nineteenth century. It assumes that war is universal and fundamentally unchanging. In this view, what was true of war a thousand years ago is equally true today, for the reason that human nature is not malleable and people everywhere across time and space are very much the same. It is this attitude that lies behind the statement of Thucydides that he wished his book about the Peloponnesian War to endure forever and be a 'possession for all time'. After all, Thucydides believed that an important objective of his work was to expose profound truths about war and about human polities at war that would be of permanent value, since 'exact knowledge of the past' would be 'an aid to the understanding of the future'.[21] It is also this kind of thinking that explains Napoleon's famous comment that 'knowledge of the higher parts of war is acquired only through the study of history of the wars and battles of the Great Captains', by whom he meant Alexander, Hannibal, Caesar, Gustavus Adolphus, Marshal Turenne, and Frederick the Great.[22]

There is obviously something profound and true about this point of view, particularly at the level of strategy. As Michael Handel rightly noted: 'the basic logic of strategy . . . is universal'.[23] Much that is instructive and suggestive about strategy can indeed be gleaned from an analysis of past wars, even wars fought in antiquity – for which reason the Naval War College's strategy course gives Thucydides' work a prominent place. Yet even at the strategic level there is something missing from this style of interpretation, since to understand any war one must grasp its political as well as purely military characteristics. And while the logic of strategy does transcend history and geography, politics are earthbound, the product of specific circumstances, cultures, and institutions. The values, mores, preferences, and expectations of particular societies are often quite different, and these differences play a significant role in shaping the nature of war.

However, when the subject at hand is operations or tactics the pre-modern approach can be even more misleading, since history is by no means a perfect or exact guide to the future. It scarcely needs saying that the character of war has changed over the centuries. One of the more obvious instruments of that change has been technological advance.

By the middle of the nineteenth century, for example, new technologies – the telegraph, the railway, the rifle, and so forth – began to revolutionize the battlefield. It was the beginning of a period of extremely rapid military-technical innovation that continued

unabated until the outbreak of World War I. Between 1870 and 1914, the great powers of the world scrambled to adopt the newest and latest technological improvements in weapons. Smokeless powder, magazine rifles, quick-firing (QF) artillery, machine-guns, the dreadnought, and the airplane – all were added to the arsenals of the powers.[24] However, despite all this rapid change, there were soldiers in Europe in whom the pre-modern view of war was so deeply engrained, and whose attachment to military tradition was so strong, that they denied that the new weaponry made any difference to the underlying logic of war.

Baron Jomini, famous theoretician of Napoleonic warfare, insisted that 'improvements in firearms will not introduce any important change in the manner of taking troops into battle'.[25] Colonel G.F.R. Henderson remained convinced until his death that the increased lethality and range of the new weapons had neither reduced the value of the cavalry, nor invalidated the massing of troops in close order for the bayonet charge.[26] And the colorful Russian General M.I. Dragomirov, war hero and influential military savant, was even blunter in his dismissal of the idea that modern technology could substantively change war: 'there is nothing to make a fuss about in all the pretended revelations of the science of war', he wrote. 'Modern tactics remain substantially what they were at the time of Napoleon. Napoleonic tactics rest on a firm foundation, on principles that can never be affected by changes of armament.'[27]

Yet everyone did not share this extreme opinion. Other military leaders and thinkers, perhaps less conservative, less hidebound, recognized that war had indeed changed.[28] They disagreed, however, about how meaningful the changes had been. This leads us to the next style of interpreting military lessons and of war in general – what we might describe as the positivist approach.

Positivism was an intellectual system worked out by the French philosopher Auguste Comte (1798–1857). It was the contention of Comte that it was possible to construct a thoroughly scientific method for the study of history and society that would eventually result in the discovery of actual laws of human development. One found these laws by deducing the present condition from all probable antecedents. This process of deduction would give rise to generalizations, and generalizations, once tested, would lead to positive laws – hence 'positivism'. Positivism was one of the most ambitious intellectual systems created during the entire nineteenth century, a period notable for its system-building; Comte's theory aspired to encompass the totality of knowledge. It additionally claimed to provide access to the future, for if the 'laws of progress', as Comte called them, explained the condition of society now, they also permitted reliable prediction about society in the years ahead.[29]

Comtean philosophy, with its ostensibly scientific rigor, was attractive and had influence in a variety of fields. Military thought was no exception. One feature that accounted for its appeal was that it recognized, embraced, and explained change, while simultaneously holding that there was an underlying core of unalterable truth. One person who fell under the sway of positivism in the military, who in fact almost exemplifies it, was the French Colonel Ardant du Picq (1828–70).[30] The famous statement with which he began the second part of his book *Combat Studies* (*Études sur le Combat*) testified to the profound impression Comte had made on him: 'the art of war is subjected to numerous modifications by industrial and scientific progress, etc. But one thing does not change, the heart

of man.'[31] Killed in the early stages of the Franco-Prussian war, du Picq did not live long enough to produce many published works. Virtually all his completed writings concern tactics, for he believed that effective tactics were the foundation of success in battle, and, by extension, in war. He was particularly interested in moral factors in war – the way in which such emotions as fear and the desire for self-preservation shaped the performance of troops in combat, which interest is epitomized in his famous aphorism that discipline was a matter of getting men to fight despite themselves.[32] Correct tactics, or 'a method of combat, sanely thought out in advance', could be developed not only by studying prior wars in books, but also, in true positivistic fashion, by administering exhaustive questionnaires to the eye-witnesses and survivors of the most recent wars.

Although few were as committed as du Picq to the value of accumulating a comprehensive database of modern combat experience, other later writers also betrayed the influence of positivism in various degrees. In his 1885 *Modern War*, General Victor Derrécagaix approved of tactical innovation, while insisting that 'the principles of the past preserve all of their importance'.[33] Even Ferdinand Foch, the future Marshal and Supreme Allied Commander in World War I, although an eclectic borrower from many military traditions, also owed his own debt to positivism, as was evidenced in his 1903 volume *Des Principes de la Guerre* (*The Principles of War*), which included what he described as a 'mathematical demonstration' that the latest innovations in the technology of rifles and artillery continued to favor the offense, not the defense.[34]

There is much of value in the works written from a positivist standpoint, particularly those of du Picq, whose perceptive insights about morale and military psychology still eminently repay the reading. Nevertheless, positivism comes freighted with its own dangers. Positivists or quasi-positivists are often prone to fall victim to what might be described as the fallacy of the linear projection – that is, the view that what has happened in the immediate past is going to happen again in the immediate future; that by means of a straight-line projection, one can deduce what will come next.[35] As an intellectual system positivism is utopian and presupposes a uniform continuity in history, from the past into the present and, by implication, into the future. Positivists are consequently interested in trends, and the quest for trends can blind them to aberration, accident, and chance, which of course are the engines of discontinuity. Moreover, whether conscious of it or not, those who make linear projections in military affairs are often basing them on unwarranted assumptions about the inevitability of prior military outcomes.

This fallacy is not solely the property of positivists, of course. All sorts of people have been seduced by the simplicity of the linear projection. It is, however, a fallacy against which adherents of the third approach take extreme precautions – perhaps too extreme. This third approach is that of pragmatic skepticism, which holds that general laws of war or eternal principles of war really cannot be said to exist. To the pragmatic skeptic, effectiveness in war is a function of the prevailing environment – of the time, of the place, of the level of technical development of armaments and so forth. To seek inner truths about war, or to speculate about the eternal essence or meaning of war, is therefore a futile waste of time.

Helmuth von Moltke was of this opinion. In an article of 1871, he observed that '[t]he doctrines of strategy hardly go beyond the first proposition of common sense; one

can hardly call them a science; their value lies almost entirely in their concrete application'. 'Strategy', he insisted, 'is but a system of expedients.'[36]

Other theorists found pragmatic skepticism equally congenial. General Rudolf von Caemmerer, author of *The Development of Strategical Science during the Nineteenth Century*, shared Moltke's opinions and took great pains in his book to show how not only Napoleonic tactics, but Napoleonic operational principles had been rendered obsolete by technical progress and the industrialization of war. Caemmerer's debunking of Napoleon's methods did not mean that he thought there were no correct tactical or operational solutions to military problems; in his view, correct solutions did exist, but they were entirely situation-specific. It was the task of the gifted general armed with inspiration and willpower to choose judiciously from the options available to him. Were Napoleon to rise from the dead, insisted Caemmerer, he would be the first to repudiate those military techniques and procedures that he had employed with dazzling success against all of the powers of Europe in the early nineteenth century, techniques and procedures that were now completely passé, despite their servile emulation for generations.[37]

A skeptical posture can be quite healthy, for it can serve as a first line of defense against school solutions and the concept of 'war by algebra' against which Clausewitz warned us so eloquently. But, at the same time, skepticism can itself be a source of intellectual weakness, principally by leading people to succumb to what I call the fallacy of the significant exception. By accustoming the mind to look for differences, variations, and freak events, and suggesting that these severely limit the applicability of prior experience, skepticism can inhibit recognition of underlying patterns that can indeed provide food for thought as we contemplate the possible character of the wars to come. These three approaches to the reading of 'military lessons', particularly the last two, have significantly distorted the way in which future war has been conceptualized ever since the middle of the nineteenth century. To illustrate this point, I will take a closer look at the fallacies that stemmed from both positivism and skepticism, and at their implications for receptivity to 'military lessons'.

Fallacies and receptivity: linear projection

Let me begin with the fallacy of linear projection. A major consequence of the German wars of unification in the 1860s and 1870s was the creation of a paradigm for the future of European armed conflict that held sway for the ensuing 45 years.[38] It was assumed that to be victorious in a future war, a power would have to field an enormous army, composed both of regulars and reservists, who would be called to colors from civilian life on the eve of hostilities. The mobilization and concentration of such a force would have to be calculated with mathematical precision in accordance with a rigidly detailed plan for exploiting the national system of railroads. In such an environment, advantages would accrue to the power that struck earliest and with the most mass, which meant that increasing the speed and efficiency of one's own mobilization and one's own offensive became an obsession of European general staffs.

A parallel assumption was that the war would begin with a great battle, or set of great battles, that were likely to decide the entire conflict, just as Sadowa and Sedan were

supposed to have done in 1866 and 1870 respectively. This misapprehension – the so-called 'short-war illusion' – led European military planners to conceive of wars that would last for weeks or a few months at most. It also led them to assume that wars would be fought with the munitions and equipment that had already been stockpiled in peace-time. There would be no need to put the economy on a war footing, for the conflict would be over before the stockpiles had been exhausted.

As a result of these premises, in August of 1914 the French, Germans, Austrians, and Russians all attempted to execute extraordinarily complicated plans for rapid offensives that were supposed to result in decision. None of the plans worked. In reality, as we all know, World War I did not feature early, decisive battles, was not short, and resulted in the virtually total militarization of the economies and societies of all the belligerents.

At first glance, the attachment of European elites to the 'short-war illusion' appears mystifying, for there were several conflicts at the turn of the century that one might think should have raised doubts about the Bismarckian paradigm, in general, and about the wisdom of offensives, in particular. The Russo-Japanese war of 1904–05 is a case in point. This conflict, a limited war fought in Korea and Manchuria, saw the use of such modern military technologies as machine-guns, magazine rifles, and QF artillery on a scale heretofore never seen. One thing that has impressed many historians (as well as Colonel Warden) is the degree to which certain episodes in the Russo-Japanese War seemed clearly to foreshadow events that would occur in the great European war that broke out just ten years later.

The Japanese siege of Russia's Pacific naval base at Port Arthur, for example, featured trench warfare, the stringing of miles of barbed (and electrified) wire, the employment of electric searchlights to foil night attacks, and the high-explosive shelling of field fortifica-tions. It saw artillery preparation before attacks that in terms of intensity and duration seemed to presage the monster barrages of World War I. To cite just one instance, prior to an assault on a single Russian strongpoint on the outskirts of Port Arthur, the Japanese fired over a thousand artillery rounds in four hours.[39] Some of the land battles of this war, such as Mukden, involving as they did hundreds of thousands of troops, seemed to be eerie dress rehearsals for the Marne, the Somme, and Passchendaele. The combat in Manchuria also provided abundant evidence of the destructive power of modern ordnance, rifles, and machine-guns, particularly when used against infantry trying to take fortified positions by frontal assault.

Why, then, did not Europe's military planners foresee the deadlock and carnage of the Western Front? Why did they not allow their knowledge of the Russo-Japanese War, and their knowledge of the devastating power of defensive military technologies, to temper their enthusiasm for the extraordinarily offensive plans they had all prepared? Why did they not allow this experience to inform their thinking?

One answer to these questions is that the dominant paradigm of warfare, derived by linear projection from the era of Bismarck and Moltke, was so strong that the Russo-Japanese War was interpreted as reinforcing, rather than undermining it. In the first place, no one failed to note the prodigality with which human life had been expended during the war. But many foreign military positivists were even more intrigued by the simple fact that the Japanese had after all won battles and indeed the entire war, despite the defensive firepower of modern military technologies. How had they managed to do

this? On the tactical level, it seemed that they had done so through relentless offensive operations, high morale among the infantry, and a willingness to accept large numbers of casualties. The Japanese lost tens of thousands of lives in assault after assault on the famous 203 Meter Hill, which dominated Port Arthur, but in the end they took it – and it was this that impressed foreign observers.[40]

Study of the Russo-Japanese War consequently inspired two conclusions. The first was that the offense is always superior to the defense on the strategic level of war. The Russian Army had been on the strategic defensive for most of the war and had been defeated; initiative and surprise had been in the hands of the Japanese. Second, at the tactical level, the war was seen as proof that defensive positions, no matter how strongly fortified or held, can always be taken if the attacking force is motivated and willing to take casualties – even huge numbers of them. Major W.D. Bird of the British Army spoke for many when he condemned the Russians for adhering to 'the fallacy of the advantages inherent in the occupation of defensive positions'.[41] The important French theorist, General François de Négrier, shared this view, and wrote that 'the Russo-Japanese war had demonstrated yet again that by offensive tactics alone can victory be assured'. Négrier went on to argue that the war was an 'object-lesson in the overwhelming influence of moral forces'. Owing to their discipline, patriotism, and courage, the Japanese had seized positions despite the murderous fire the Russians trained on them. Ergo, reasoned Négrier, an army with superior moral force could fight and win, even if it was outnumbered and technologically outclassed.[42]

In other words, the Russo-Japanese War resulted in the adjustment of the Bismarckian paradigm of warfare, not its supersession. The linear projection involved here, of course, ignores the question of contingency entirely. Just because a war turned out one way does not mean that this was the only possible outcome. If, for example, Russia had not agreed to negotiations, but had instead managed to defeat Japan in the summer of 1905, as was by no means impossible, who then would have argued that ceaseless offensive operations were always the key to victory? But why, indeed, was the Bismarckian paradigm so strong? One reason is that the Prussian method had at one time been astonishingly successful and seemed to be a recipe for quick victory. Who would not prefer favorable outcomes that were rapid and cheap to those that were slow and expensive? Moreover, and this is very important, by 1904, military establishments had been operating in accord with the Bismarckian paradigm for over 30 years. Virtually all planning and training had been based on its assumptions.

This brings us to the first point about receptivity to military lessons. Military organizations are not loath to innovate, just as they are not averse to the study of the experience of recent wars. However, absent compelling reasons to the contrary (such as those supplied by catastrophic defeat), military institutions, like all complex organizations, prefer the stately pace of incremental change to the disquieting staccato of violent transformation. This resistance to radical innovation goes a long way towards explaining the popularity and longevity of the dominant paradigm. Of course, as it happened, World War I did not resemble the German Wars of Unification at all. But in exploding the old paradigm, the Great War gave birth to a new one: the view that future wars would be protracted conflicts fought largely from static positions. In other words, they would be repetitions of World War I, or at least key phases of World War I, with

the defense superior to the offense, stalemate, and the problem of the break-through unresolved.

In the early 1920s, A. Kearsey, a retired lieutenant-colonel of Britain's Imperial General Staff, published a book on tactics and strategy that opined 'that a purely frontal attack against a well-entrenched position held by resolute troops must always involve prohibitive losses'.[43] He then proceeded to argue that if it could not be averted, the next general European war would be characterized by the employment of great fleets of tanks and immense clouds of poison gas. This prophecy was a direct linear projection into the future of the military experience of the Western Front in 1918. In other words, a second world war would be like the first, except more so.[44]

One practical result of the emergence of the new dominant paradigm was the construction of a series of defensive positions during the inter-war period, of which the most famous was, of course, the Maginot Line. An enormous band of fortifications that shielded the north-eastern borders of France, the Maginot Line was based on the insight that, in the words of Marshal Henri Pétain, 'assuring the inviolability of the national soil is . . . one of the major lessons of the [last] war'.[45] The French were not alone in their faith in fortifications, for almost everybody in Europe was building them: the Czechs constructed the Little Maginot Line; the Finns, the Mannerheim Line. Even countries with aggressive military intentions, such as National Socialist Germany and the Soviet Union, made investments in fortifications: the West Wall and Stalin Line were put up by the Nazis and the Communists, respectively, in the 1930s. The bitter irony is that in the end, of course, the defensive mindset of the World War I paradigm proved to be just as costly, deceptive, and perilous as the Bismarckian paradigm had been in 1914.

The temptation represented by linear projection, by the way, was not confined to theories of land warfare, for it had an impact on thinking about war at sea, as well. Consider Alfred Thayer Mahan and Sir Julian Corbett, two of the greatest of all naval theorists. When Mahan published *The Influence of Sea Power upon History* in 1890, the battle of Lissa in 1866 was the largest recent naval battle. Lissa (which had been decided by ramming) was nonetheless merely an episode in Austria's war with Italy and Prussia in that year, and of little significance to its outcome. Partly for this reason, Mahan insisted that, 'It is doubly necessary . . . to study critically the history and experience of naval warfare in the days of sailing ships, because while these will be found to afford lessons of present application and value, steam navies have as yet made no history. . .'.[46] Given this perspective, Mahan logically placed enormous stress on the lessons afforded by Britain's experience in the Napoleonic Wars. In particular, Horatio Nelson's defeat of the fleets of France and Spain off Trafalgar in 1805 shaped Mahan's views about naval strategy and the role of navies in war generally. To Mahan, it was the duty of navies to prepare to fight and win another Trafalgar against their chief competitors. Mahan, then, talked about the future of naval warfare by doing a linear projection that reached back to the Napoleonic Wars.

By contrast, Corbett, who published his *Principles of Maritime Strategy* in 1911, had a different vantage point. He was, after all, a British subject and thus belonged to a society that controlled the greatest maritime empire on earth, whereas Mahan was a representative of a country that was just beginning to move on to the world stage as a great

power. But it must be noted as well that Corbett had a different set of historical examples before him in 1911 than Mahan had had in 1890. By that time, the Spanish–American War, the Boer War, and the Russo-Japanese War had all been fought, and it is to these wars that Corbett refers most often. All of these conflicts had been limited wars, had been fought on what we might describe as imperial peripheries, and had been won by countries that in the end successfully integrated land and sea power in relationships of mutual support. Although he admitted that there could be exceptions, Corbett tended to imagine future warfare as conforming to this pattern.[47] Thus, despite all of their theoretical sophistication, both Mahan and Corbett were by no means immune to the seduction of linear projection themselves.

Fallacies and receptivity: the significant exception

Positivists, of whatever stripe, were thus predisposed to linear projection, which could easily become a dangerous method for learning the lessons of war. Yet pragmatic skepticism could give rise to its own equally harmful fallacy – that of the 'significant exception'. As we have already seen, the Bismarckian paradigm's emphasis on the value of offensive action was not shaken by the Russo-Japanese War, which 'linear projectors' read as reinforcing that value. However, another characteristic of the Russo-Japanese War was that it was not short, but protracted. One might think that this would have raised the gravest doubts about the short-war illusion, but it really did not – especially among those who regarded the conflict in Manchuria as *sui generis*.

One person who perpetrated this fallacy was the great German theorist Friedrich von Bernhardi, a firm adherent of skeptical pragmatism. Bernhardi explicitly warned against using the Russo-Japanese War mechanically to forecast a future European war:

> The next war will not come off distinctly under the same conditions and circumstances as those of recent date. Experience of war can never be applied directly to the future. The creative mind must anticipate experience of the future. Not the lessons that the latest wars apparently or really have taught us must we adopt indiscriminately in the next war, but what appears to us to be the most suitable after close investigation of the likely conditions.[48]

On the face of it, this is a powerful and extremely intelligent statement. But this *aperçu* does not, however, provide us with much guidance. How precisely do we determine what the most 'suitable' lessons of any previous war are? Which lessons are we to accept and which are we to exclude? Obviously, the judgment will be subjective. Employing the familiar argument of pragmatic skepticism that wars were defined by the unique properties of time and place, Bernhardi insisted that key aspects of the Russo-Japanese War were highly unlikely to be replicated in a general European war, since, among other things, the scale and the geography of the theater would be so different.[49]

Thus, if the 'linear projectors' started with the presumption of continuity, Bernhardi began with a presumption of discontinuity; and this, of course, was the significant exception. Whereas in Manchuria the terrain had been rugged and the fronts extremely attenuated, in a general European war the terrain would be flat, and millions of men would

be engaged, permitting operations and attacks in depth. He employed the same logic to explain why the European war would be short, rather than protracted, as the Russo-Japanese War had been. Then, too, he criticized the idea that numerical superiority had been a key to many of Japan's victories by observing that bold and decisive generalship could more than compensate for inferiority in numbers. In Bernhardi's view, the coming European war would be a short war of maneuver. Once again, this is exactly what World War I was not.

Why did someone as capable as Bernhardi start with the presumption of discontinuity? Why was he so obsessed with limning the differences between the war of 1904–05 and a general European war? Bernhardi gives the answer away in various places in his book: he needed to imagine a war that he thought that Germany could win.[50] If that war were a war of lengthy fronts and trenches, then it would by definition be a protracted war, a war of attrition. He believed that in such a conflict Germany and its allies would sooner or later *lose*, since they would be outnumbered by the powers arrayed against them – France, Russia, and perhaps Britain as well. To Bernhardi, this idea was impermissible and defeatist; accordingly, he censored his own thinking and rejected the possibility of protracted war a priori and out of hand. In other words, his own personal intellectual desires and needs decided for him what the useful lessons of the Russo-Japanese War would be, and what would be the significant exceptions.

This brings me to my second point about receptivity, which is that military establishments often prepare to fight the wars they would prefer to fight, rather than others that may actually be more likely. Lest anyone think that this failing is not to be met with in recent times, let me jump ahead to the US war in Vietnam. Some scholars maintain that William Westmoreland's relative neglect of counterinsurgency during his tenure at the head of Military Assistance Command Vietnam can be explained by his fear of the costs and risks to the US Army of a massive counterinsurgency campaign. He consequently decided that he did not want to wage one and instead planned for a large-unit war against the regular North Vietnam Army, a war with which the US Army would be more comfortable and for which it was better prepared.[51] This, of course, is not the only possible interpretation of his actions. However, arguably, even if the large-unit war had been a splendid success (which it was not), without a better program of counterinsurgency, US victory in Vietnam was simply not possible, given the constraints imposed on the use of force there and the value of the political object to the United States in general. In other words, what Westmoreland may actually have done was to fight the war he preferred rather than the one he had.

Ex post facto lessons

The search for 'military lessons' thus involves ransacking the past to acquire (putatively) valuable guidance for the future. There is nothing surprising about this enterprise. All military organizations would like to win wars quickly, decisively, and at the lowest possible cost in human lives. These are commendable aims, and no sane person can object to them. If the use of 'military lessons' assists in achieving these aims, so much the better. The problem is that 'military lessons' often do not facilitate such military effectiveness. This is so because the entire concept of the 'military lesson' may be dubious.

That is not to say that we cannot learn valuable things by studying the wars of the past and reflecting upon them. There are all manner of things we can learn. We can, in fact, learn about the operation and maintenance of weapons and equipment. We can identify logistical and organizational failings and seek to rectify them. We can observe how certain tactics and approaches to operational problems worked in practice. The 'shelf-life' of such insights, however, may be short, and it may be a mistake to extrapolate from them. We can also use history to hone our ability to think creatively about strategy. But if we try to use a recent war, or even the most recent war, to deduce universal lessons about the nature of modern war, we will most assuredly fail.

The word 'lesson' connotes authority and permanence, for a lesson is freestanding. But war is not freestanding, for its nature is dependent, as Clausewitz shows us, on the interaction of the belligerents. Because the nature of war depends on interaction, it is therefore impermanent, in the same way that centers of gravity cannot exist outside particular political and military contexts. There are many reasons why this is so; let us adduce two.

First, say we presume that what succeeded against one adversary in the past will assuredly work against the next one in the future. But what if that new adversary acts unexpectedly, or merely differently, or figures out how to control the shape of the next conflict so as to maximize his strengths and exploit our weaknesses? A good illustration of this is the German Army during the Weimar period. After the humiliation of the Treaty of Versailles, Germany's military planners eventually reached consensus that insofar as was humanly possible, they had to try to prevent the next war from being fought as World War I had been: were a subsequent war to be another prolonged, attritional struggle, the probability was exceedingly high that Germany would once again suffer defeat. The upshot was the adoption of tactics, weapons, and doctrine that were all supposed to promote the staging of mobile and decisive offensives.[52] When London and Paris declared war on Hitler in 1939, the French were of the view that, despite its offensive doctrine, the German Army knew that it could not assault the Maginot Line defenses without incurring suicidal losses. Indeed, merely to attempt such an attack might provoke a domestic revolution against the Nazi regime. The war would therefore most likely be a long one, and Germany would be ground down by economic attrition, just as it had been in the conflict of 1914–18.[53] Their reading of the 'lessons' of the Great War, then, disadvantaged the French both intellectually and psychologically and helped prepare the way for the military collapse of their country in the spring of 1940.

Second, what happens if prospective belligerents learn exactly the same things from a recent war, or a recent trend, and this double knowledge cancels itself out? For example, by the end of the nineteenth century virtually everyone realized how devastating modern field artillery could be when fired from indirect positions against masses of infantry. As a result, all the major European powers increased the number of field guns and anti-personnel rounds in their arsenals prior to 1914. Indeed, artillery emerged as perhaps the dominant weapon of World War I; probably 60 per cent of all casualties in the war were the consequence of shelling.[54] Ironically, however, field artillery did not produce the rapid break-throughs and victory that its advocates had expected. It was the abundance of field artillery firing shrapnel that as much as anything else forced armies into the trenches. The interactive collision of belligerents who had all learned the same

'lesson' helped produce the unintended consequence of deadlock. In fact, the stalemate on the Western Front was the result of an entire series of unforeseen interactions among all the armies fighting there.[55]

At the strategic level of analysis, a 'military lesson' has two components: an interpretation of the nature and outcome of a previous war; and an explicit or implicit *prophecy* about the nature and outcome of the next one. An interpretation without the prophecy would merely be an exercise in historical reasoning and no contribution to military theory at all. In most so-called 'military lessons' the prophecy is as deeply embedded in the interpretation as a clove studded in an onion. In any 'military lesson' it is a discrete historical interpretation that both makes possible and validates the prediction. Yet both of the components of the 'military lesson' are often problematic. The hazards of prophecy are obvious and do not need to be belabored. Who can infallibly foresee everything that a future enemy might do? Still further, can one even confidently divine everything one's own side might do in a hypothetical prospective war? As Michael Handel wrote, frequently 'individuals and nations are unaware of their own limitations and weaknesses, let alone those of their adversaries'.[56] If it is difficult to know oneself, how can one be sure that one knows one's enemy? To prophesy about future war therefore involves lightly brushing aside all of these imponderables and dismissing the principle of interaction.

But the particular style of military-historical interpretation advanced by the 'military lesson' can have its analytic dangers, too, for it is usually anchored in retrospective determinism, of one kind or another. That is, it presupposes that the reasons one believes to have been most important in determining the outcome of a war equally ruled out any other dénouement. In other words, given a belligerent's superiority over his opponent in technology, generalship, doctrine, manpower, or any of a number of other factors either separately or in combination, the victory of the former and the defeat of the latter were inevitable. Whether acknowledged or not, it is the assumption of an inevitable outcome that permits the extraction of a 'lesson' from one war that can be applied to the next. However, the outcomes of previous wars frequently were not inevitable, but contingent. The way a war or a campaign turned out often depended on human choices and human interactions; had the choices or interactions been different, the outcomes might have been also. Therefore, to assume that success can be assured by emulating the performance of the winner and avoiding the mistakes of the loser in a previous conflict may well be to indulge in an impermissible exclusion of alternative possibilities. As we have already seen in the case of the Russo-Japanese War, if Japan had lost the war (and it could have, had the Russians made different decisions), then the 'lessons' of the war would have been different also. But an argument about a 'military lesson' denies the fact of contingency and ignores interaction, not only in the future but even in the past.

To put it another way, whether a lesson from a particular war is true or false can only be determined *ex post facto*, in an unpredictable future. And, in consequence, sometimes you can only learn what the 'true' lesson was when it is too late. It is because of this that the distinguished military historian Michael Howard insisted in an essay published a generation ago that in any war 'usually everybody starts even and everybody starts wrong'.[57] It is also because of this that Anthony Cordesman and Abraham Wagner ended an enormous three-volume work entitled *The Lessons of Modern Warfare* with the

pessimistic observation that 'understanding the overall nature of modern conflict' is 'ultimately an impossible process'.[58]

Notes

1 In his *Life of Reason*, Santayana actually wrote: 'Those who cannot remember the past are condemned to fulfil it.' Georg Wilhelm Friedrich Hegel, *The Philosophy of History*, trans. J. Sibree (New York: Dover Publications, 1956), p. 6: 'peoples and governments have never learned anything from history, or acted on principles deduced from it'.

2 Bliokh was, of course, a pacifist who wanted to demonstrate that a future general war would be so murderous, costly, and indecisive that it could not be considered a rational instrument of policy. He wrote different sections of this massive work in Russian, Polish, and German. The first publication was in Russian. I. S. Bliokh, *Budushchaia voina v teknicheskom, ekonomicheskom i politicheskom otnosheniiakh*, 6 vols (St Petersburg: I. Efron, 1898). The complete French translation has been reprinted: Jean de Bloch [Ivan Bliokh], *La guerre future aux points de vue technique, économique et politique*, 6 vols (Paris: Guillaumin, 1898–1900; reprint: New York: Garland, 1973).

3 On the 'short-war illusion' see Archer Jones, *The Art of War in the Western World* (Urbana and Chicago, IL: University of Illinois Press, 1987), p. 423. See also Hew Strachan, *The First World War*, vol. I: *To Arms* (Oxford and New York: Oxford University Press, 2001), pp. 74, 173, 1010–13. Strachan presents a more nuanced interpretation of the 'short-war illusion' than has heretofore appeared in the historical literature. He identifies a number of European statesmen and military leaders who, prior to 1914, evidenced some awareness that a general war might become protracted. Nonetheless, he also shows that European military establishments had generally planned for a short war.

4 I.A. Korotkov, *Istoriia sovetskoi voennoi mysli* (Moscow: Izdatel'stvo 'Nauka', 1980), pp. 143–4. Gabriel Gorodetsky, *Grand Delusion: Stalin and the German Invasion of Russia* (New Haven, CT: Yale University Press, 1999), p. 127.

5 Nobutaka Ike, ed. and trans., *Japan's Decision for War: Records of the 1941 Policy Conferences* (Stanford, CA: Stanford University Press, 1967), p. 153.

6 Lewis Sorley, *A Better War: The Unexamined Victories and Final Tragedy of America's Last Years in Vietnam* (New York: Harcourt Brace, 1999), pp. 4–5. See also Eric M. Bergerud, *The Dynamics of Defeat: The Vietnam War in Hau Nghia Province* (Boulder, CO: Westview Press, 1991), pp. 89–90.

7 (No name given) 'New Evidence on the Soviet Intervention in Afghanistan', *Cold War International History Project Bulletin*, 8–9 (winter 1996/97), pp. 128–84.

8 Carl von Clausewitz, *On War*, ed. and trans. Michael Howard and Peter Paret (Princeton, NJ: Princeton University Press, 1976), pp. 88–9.

9 Jay Luvaas, *The Military Legacy of the Civil War: The European Inheritance* (Lawrence, KS: University Press of Kansas, 1988), p. 126.

10 Col. John A. Warden III, USAF, 'Employing Air Power in the Twenty-First Century', in Richard H. Schultz, Jr and Robert L. Pfaltzgraff, Jr (eds), *The Future of Air Power in the Aftermath of the Gulf War* (Maxwell Air Force Base, AL: Air University Press, 1992), p. 80.

11 For example, the effects of the long bow became obvious to the French cavalry at the battle of Poitiers in 1356, that is, almost 60 years before Agincourt. The result, as one scholar has put it, was 'great changes in armor design intended in part to make men-at-arms less vulnerable to archery'. Clifford J. Rogers, 'The Efficacy of the English Long Bow: A Reply to Kelly DeVries', *War in History*, vol. 5, no. 2 (April 1998), p. 241. While it is true that at Cambrai in November 1917 the use of tanks allowed the British to make an advance of 6,000 yards, there was no break-through and the performance of the tanks was quite properly regarded as mixed. See Paddy Griffith, *Battle Tactics of the Western Front: The British Army's Art of Attack 1916–1918* (New Haven, CT: Yale University Press, 1994), pp. 164–5. As for the sinking of the *Ostfriesland*, Billy Mitchell's bombers did destroy it, but only by dropping 'bombs from an unrealistically low level to ensure fatal hits': I.B. Holley, Jr, 'Reflections on the Search for Airpower Theory,' in Col. Phillip S. Meilinger (ed.), *The Paths of Heaven: The Evolution of Airpower Theory* (Maxwell Air Force Base, AL: Air University Press, 1997), p. 582.

12 Brian Bond, *The Victorian Army and the Staff College, 1854–1914* (London: Eyre Methuen, 1972), p. 157. Brian Holden Reid, *Studies in British Military Thought* (Lincoln, NB: University of Nebraska Press, 1998), p. 136.

13 Luvaas, *Military Legacy*, pp. 128–42.

14 William C. Fuller, Jr, *Civil–Military Conflict in Imperial Russia, 1881–1914* (Princeton, NJ: Princeton University Press, 1985), p. 20.

15 Arvell T. Erickson, *Edward T. Cardwell, Peelite* (Philadelphia, PA: American Philosophical Society, 1959), pp. 80–5.

16 Quoted in M.V. Annenkov, *Voina 1870 goda. Zametki i vpetchatleniia russkogo ofitsera* (St Petersburg: Tipografiia tovarishchestva 'Obshchestvennaia pol'za', 1871), p. 9.

17 M. Zinov'ev, 'Zametki o Germanskoi armii', *Voennyi sbornik*, June (1873), part 1, p. 278.

18 G.F.R. Henderson, *The Science of War* (London: Longmans, Green, 1905), p. 184. See also Christopher Duffy, *The Military Life of Frederick the Great* (London: Routledge, 1986), p. 300.

19 B.H. Liddell Hart, *Strategy*, 2nd rev. edn (New York: New American Library, 1974), p. 3.

20 Azar Gat has developed the argument that virtually *all* military thought from 1780 to 1914 can be divided into 'Enlightenment' and 'Counter-Enlightenment' strands. By the early nineteenth century, the latter had become 'Romanticism'; by the mid-nineteenth century, the former, 'Positivism'. Although I find Gat's ideas stimulating, I do not think that his typology is ultimately successful. There are simply too many military intellectuals and theorists who have to be dragooned into their assigned categories under protest. Nonetheless, I do believe that there are typically 'positivist' and 'skeptical' approaches to the reading of military lessons. See Azar Gat, *The Origins of Military Thought: From the Enlightenment to Clausewitz* (Oxford: Oxford University Press, 1989), and *Military Thought: The Nineteenth Century* (Oxford: Oxford University Press, 1992).

21 *The Landmark Thucydides*, ed. Robert B. Strassler, trans. Richard Crawley (New York: The Free Press, 1996), p. 16.

22 Jay Luvaas (ed. and trans.), *Napoleon on the Art of War* (New York: Free Press, 1999), p. 24. Ironically enough, the argument has been made that this was not the way Napoleon himself acquired knowledge of the art of war. Jean Colin has maintained that the greatest intellectual influences on Napoleon's thinking about warfare were the works of such eighteenth-century French theorists as Guibert and Bourcet. See Jean Colin, *L'education militaire de Napoléon* (Paris: Chapleot, 1901), pp. 141–2.

23 Michael I. Handel, *Masters of War: Classical Strategic Thought*, 3rd edn (London: Frank Cass, 2001), p. xvii. See also Colin S. Gray, *Modern Strategy* (Oxford: Oxford University Press, 1999), a book-length defense of the proposition that: 'To understand modern strategy is to understand it in all ages' (p. 364).

24 Larry H. Addington, *The Patterns of War since the Eighteenth Century* (London: Croom Helm, 1984), pp. 44–5, 91–3, 106–8.

25 Baron de Jomini, *The Art of War*, trans. Capt. G.H. Mendel and Lieut. W.P. Craighill (1862; reprint, Westport, CT: Greenwood Press, 1992), p. 325.

26 Henderson, *Science of War*, pp. 340–1.

27 Quoted in Henderson, *Science of War*, p. 144.

28 In fairness, I must observe that Henderson died in 1903 and Dragomirov in 1905.

29 See, for example, Auguste Comte 'Fundamental Characteristics of the Positive Method in the Study of Social Phenomena', in Stanislav Andreski (ed.) and Margaret Clarke (trans.), *The Essential Comte* (New York: Barnes & Noble, 1974), pp. 144–50.

30 On du Picq, see Gat, *Military Thought*, pp. 28–39.

31 Ardant du Picq, *Études sur le combat* (Paris: Chapelot, 1914), p. 88.

32 Du Picq, *Études*, p. 94: 'Le but de la discipline est de faire combattre les gens souvent malgré eux.'

33 V. Derrécagaix, *Modern War*, trans. C.W. Foster, part 1 (Washington, DC: J.J. Chapman, 1888), pp. 1–2.

34 Marshal [Ferdinand] Foch, *The Principles of War*, trans. Hilaire Belloc (New York: Chapman & Hall, 1920), p. 32: 'Any improvement of firearms is ultimately bound to add strength to the offensive, to a cleverly conducted attack.' Foch assumes an attack of two battalions against one. If both sides are armed with rifles firing a round a minute, the attackers will discharge 2000 bullets to the defenders' 1000. Yet if each force is equipped with rifles capable of firing ten rounds a minute, the attackers will be capable of shooting 20,000 bullets to the attackers' 10,000 in the same sixty-second period. This argument is, of course, bizarre and completely overlooks such matters as the difficulty of aiming while on the run, the tactical advantages of firing from prone and/or fortified positions, not to mention the insalubrious effect of combat deaths on an attacker's rate of fire. An illustration of Foch's belief in the principle of continuity throughout all modern wars is the following observation, with which he concluded a brief account of the Russo-Japanese War: 'Once again, industrial

improvements modified the forms of war and continued the evolution of the art, but without eliciting a revolution in it, without affecting in the slightest the fundamental principles of the conduct of war.' (Maréchal Ferdinand Foch), *Préceptes et Jugements du Maréchal Foch*, ed. A. Grasset (Paris: Berger-Levrault, 1919), pp. 227–8.

35 There are of course exceptions. The distinguished British theorist J.F.C. Fuller, for instance, can be assigned to the positivist camp. Not only did he believe that a 'science of war' was possible, he tried to develop one himself. See J.F.C. Fuller, *The Foundations of the Science of War* (London: Hutchinson, 1926), p. 43, for his debt to Comte. Yet Fuller, who had an original and powerful mind, most emphatically did not envision the next European war as aping the features of the war of 1914–18. See his *Machine Warfare: An Inquiry into the Influence of Mechanics on the Conduct of War* (Washington, DC: The Infantry Journal, 1943), pp. 44–5. See also Holden Reid, *British Military Thought*, pp. 66–7, 73–4, 82.

36 Daniel J. Hughes (ed.), *Moltke on the Art of War: Selected Writings*, trans. Daniel J. Hughes and Harry Bell (Novato, CA: Presidio, 1993), p. 124.

37 Lieut.-General [Rudolf] von Caemmerer, *The Development of Strategical Science During the Nineteenth Century*, trans. Karl von Donat (London: Hugh Rees, 1905), pp. ix–x, 212–13, 219, 276–7.

38 In an extremely interesting recent book, Antulio J. Echevarria II has argued that the application of the term 'paradigm' to changes in military theory is inappropriate. 'Thomas Kuhn's brilliant discussion of paradigm shifts relates better to the transposition of scientific models, where anomalies – the accretion of which indicates that the model is becoming obsolete – are the exception rather than the rule. In an environment characterized by friction, chance, fear, and uncertainty, however, anomalies are more often the rule than the exception.' *After Clausewitz: German Military Thinkers before the Great War* (Lawrence, KS: University of Kansas Press, 2001), p. 226. However, as this passage makes clear, Echevarria (who incidentally uses the word 'paradigm' himself in other sections of his book) is confusing action with ratiocination. To make war is indeed to plunge into an environment of friction, chance, fear, and uncertainty; to *think* about making war is not.

39 This was the attack on the Waterworks redoubt prior to the second attempt to storm Port Arthur in September 1904.

40 Michael Howard, 'Men against Fire', in Peter Paret (ed.), *Makers of Modern Strategy from Machiavelli to the Nuclear Age* (Princeton, NJ: Princeton University Press, 1986), pp. 517–19. Also see Azar Gat, *Military Thought: The Nineteenth Century*, pp. 138–9.

41 W.D. Bird, *Lectures on the Strategy of the Russo-Japanese War* (London: Hugh Rees, 1909), p. 16.

42 General de Négrier, *Lessons of the Russo-Japanese War*, trans. E. Louis Spiers (London: Hugh Rees, 1906), pp. 54–5, 83.

43 Lt-Col. (Ret.) A. Kearsey, *A Study of the Strategy and Tactics of the Russo-Japanese War* (Aldershot: Gale & Polden, n.d.), p. 5.

44 The case of the USSR is a particularly interesting one, because Russia had suffered through *two* very different wars since 1913: the world war, and the Civil War that followed immediately on its heels. Throughout the 1920s and into the 1930s, Soviet military theorists debated whether the next war would bear a greater resemblance to the former or to the latter. M.V. Frunze, for instance, writing in 1921, clearly indicated his belief that the Russian Civil War would be the best model for thinking about a future conflict. See M.V. Frunze, 'Edinaia voennaia doktrina v Krasnoi Armii', in M.V. Frunze, *Izbrannye proizvedeniia* (Moscow: Voennoe izdatel'stvo, 1984), p. 46. See also V.A. Zolotarev (ed.), *Istoriia voennoi strategii Rossii* (Moscow: Izdatel'stvo 'Kuchkovo pole', 2000), pp. 196–7. In Germany, the new defensive paradigm was eventually rejected, but only after serious debate. General Walther Reinhardt, for example, made forceful arguments on behalf of a doctrine of defensive war. See James S. Corum, *The Roots of Blitzkrieg: Hans von Seeckt and German Military Reform* (Lawrence, KS: University of Kansas Press, 1992), pp. 55–7.

45 Eugenia C. Kiesling, *Arming against Hitler: France and the Limits of Military Planning* (Lawrence, KS: University of Kansas Press, 1996), p. 130.

46 Alfred Thayer Mahan, *The Influence of Sea Power upon History 1660–1783* (New York: Hill & Wang, 1957), p. 2.

47 Julian S. Corbett, *Some Principles of Maritime Strategy* (Annapolis, MD: Naval Institute Press, 1998).

48 Friedrich von Bernhardi, *On War of Today*, vol. II, trans. Karl von Donat (London: H. Rees, 1913), p. 98.

49 Friedrich von Bernhardi, *On War of Today*, vol. I, trans. Karl von Donat (London: H. Rees, 1912), pp. 77–8, 130; vol. II, pp. 10–11, 30–1.

50 The following passage is typical: 'If at some future time Germany is involved in the slowly threat-ening war, she need not recoil before the numerical superiority of her enemies. But . . . she can only rely on being successful if she is resolutely determined to break the superiority of her enemies by a victory over one or the other of them before their total strength can come into action, and if she prepares for war to that effect, and acts at the decisive moment. . .'. Bernhardi, *War of Today*, vol. I, pp. 100–1. See also Bernhardi, *War of Today*, vol. II, pp. 442–3.

51 For a sympathetic account that nonetheless makes this point, see Phillip B. Davidson, *Vietnam at War. The History 1946–1975* (New York: Oxford University Press, 1988), pp. 430–1. For a less sympathetic view, see Andrew F. Krepinevich, Jr, *The Army and Vietnam* (Baltimore, MD: Johns Hopkins University Press, 1986), pp. 165–7.

52 Corum, *Roots of Blitzkrieg*, pp. 66–7.

53 Ernest R. May, *Strange Defeat: Hitler's Conquest of France* (New York: Hill & Wang, 2000), pp. 285–8.

54 Griffith, *Battle Tactics of the Western Front*, p. 43.

55 For an elegant and persuasive argument about interaction and stalemate during World War, I, see Echevarria, *After Clausewitz*, pp. 224–5.

56 Handel, *Masters of War*, p. 238.

57 Michael Howard, 'Military Science in an Age of Peace', *RUSI Journal*, vol. 119, no. 1 (1974), p. 6.

58 Anthony H. Cordesman and Abraham R. Wagner, *The Lessons of Modern War*, vol. III: *The Afghan and Falklands Conflicts* (Boulder, CO: Westview Press, 1990), p. 436.

3   Why strategy is difficult

Colin S. Gray

My aim is to relate the nature of strategy to the character of its artistic application and to the unknowable context of the twenty-first century. The immodesty, even arrogance, of this endeavor is best conveyed through an anecdote about a meeting between Hannibal Barca and an armchair strategist. Hannibal suffered from what in this last century has been the German failing—winning battles but losing wars. Hannibal won all of his battles in the Second Punic War except, sadly for a Carthage that did not deserve him, the last one, against Scipio Africanus at Zama in 202 BC. He is reported to have had little patience with amateur critics.

> According to Cicero (de Oratione), the great general when in exile in Ephesus was once invited to attend a lecture by one Phormio, and after being treated to a lengthy discourse on the commander's art, was asked by his friends what he thought of it. "I have seen many old drivellers," he replied, "on more than one occasion, but I have seen no one who drivelled more than Phormio."[1]

The theme of this article lurks in the ancient strategic aphorism that "nothing is impossible for the man who does not have to do it." When I was contributing to the *Defense Guidance* in the early 1980s its basic direction for the Armed Forces could be reduced to "be able to go anywhere, fight anyone, and win." To repeat my point, to those who do not have to *do* strategy at the sharp, tactical end of the stick, the bounds of feasibility appear endless.

True wisdom in strategy must be practical because strategy is a practical subject. Much of what appears to be wise and indeed is prudent as high theory is unhelpful to the poor warrior who actually has to do strategy, tactically and operationally. Two classic examples make the point.

Carl von Clausewitz advised us that there is a "culminating point of victory," beyond which lies a decline in relative strength.[2] Great advice—save, of course, that political and military maps, let alone physical terrain, do not come with Clausewitz's "culminating point" marked. Imagine that you are a German and that it is anytime between late June 1941 and late August 1942. You have read Clausewitz. Where is the culminating point—at Minsk or Smolensk, on the Dnieper, Don, or Volga? How can you find a culminating point of victory until adverse consequences unmistakably tell you where it was?

The other example of great strategic wisdom that is difficult to translate into practical advice is the insistence of Clausewitz (and Jomini) that "the best strategy is always to be very strong; first in general, and then at the decisive point."[3] Naturally the challenge is not to comprehend the all but sophomoric point that one needs to be very strong at the decisive point. Rather it is to know the location of that point. What did Clausewitz's advice mean for Germans in the late summer and fall of 1941? Did they need to concentrate their dissipating strength on the Red Army in the field, on the road to Moscow, or both?

For a tougher call, consider the American military problem in Southeast Asia in the second half of 1965. General William Westmoreland somehow had to identify military objectives to match and secure the somewhat opaque political objectives. Mastery of the arguments in the classics of strategic theory was unlikely to be of much practical help.

The argument

Before expounding the central elements of my argument, which appear pessimistic, let me sound an optimistic note. Terrible though the twentieth century has been, it could have been far worse. The bad news is that the century witnessed three world wars—two hot, one cold. The good news is that the right side won each of them. Moreover, threats to peace posed twice by Germany and then by the Soviet Union were each seen off at a cost that, though high, was not disproportionate to the stakes nor inconsistent with the values of our civilization. Western statecraft and strategy in two world wars was not without blemish. One needs to remember the wisdom of Lord Kitchener who said during World War I: "We wage war not as we would like but as we must." Strategically, notwithstanding errors, the Western World did relatively well. Now for a darker view.

My key argument is organized around three reasons why it is difficult to do strategy well:

- its very nature, which endures through time and in all contexts[4]
- the multiplicity and sheer variety of sources of friction[5]
- it is planned for contexts that literally have not occurred and might not occur; the future has not happened.

This argument is essentially optimistic, even though that claim may appear unpersuasive given that the high-quality strategic performance is always challenged by the nature of strategy—not only by its complexity but by the apparent fact that whatever can go wrong frequently does. Also, strategy can fall because it may apply the wrong solutions to incorrectly framed questions because guesses about the future were not correct. If, despite this, the bad guys were beaten three times during the course of the twentieth century, there are grounds for hope.

Before explaining the many sources of difficulty for strategy, it is necessary to highlight the recurrence of a serious fallacy. Lest this point appear unfairly focused on the United States, I will sugar-coat the pill by citing an American who got it right, and two

others—one American and one German—who got it wrong. Samuel Griffith, who got it right, was a scholar of Chinese military theory from Sun Tzu to Mao. He once observed that "there are no mechanical panaceas" when commenting on a *Newsweek* report in July 1961 about a fuel-air explosive to destroy bunkers.[6] The American and German, who got it wrong, allowed themselves to be seduced by the promise of "mechanical panaceas." One must hasten to add that these two warrior-theorists were exceptionally able men. The point is that, writing ninety years apart, they made almost the same mistake.

The issue underlying both views is whether much of the fog and thus friction that undoes applied strategy can be thwarted by modern technology. Writing in 1905, Lieutenant General Rudolf von Caemmerer, a member of the great general staff working under Field Marshal Alfred Graf von Schlieffen, offered this claim:

> The former and actually existing dangers of failure in the preconcentrated action of widely separated portions of the army is now almost completely removed by the electric telegraph. However much the enemy may have succeeded in placing himself between our armies, or portions of our armies, in such a manner that no trooper can get from one to the other, we can still amply communicate with each other over an arc of a hundred or two hundred or four hundred miles. The field telegraph can everywhere be laid as rapidly as the troops marching, and headquarters will know every evening how matters stand with the various armies, and issue its orders to them accordingly.[7]

Caemmerer proceeded to admit that the telegraph might dangerously diminish the initiatives allowed to army commanders. The irony is that poor communications, lack of coordinated action, and a general loss of cohesion by the all important armies on the right wing of the German assault in early September 1914 allowed an Allied victory with the miracle on the Marne.[8] The telegraph was a wonderful invention, but it could not reliably dissipate the fog of war.

An American example of a functionally identical error is drawn from the magical "system of systems" invoked by Admiral William Owens, former Vice Chairman of the Joint Chiefs of Staff. In 1995 he wrote, "The emerging system . . . promises the capacity to use military force without the same risks as before—it suggests we will dissipate the fog of war."[9]

New technology, even when properly integrated into weapons and systems with well trained and highly motivated people, cannot erase the difficulties that impede strategic excellence. A new device, even innovative ways to conduct war, is always offered as a poisoned chalice. Moreover, scarcely less important, strategy cannot be reduced to fighting power alone.[10] Progress in modern strategic performance has not been achieved exclusively through science and technology.

Consider this argument: strategists today have at their disposal technological means to help dissipate the fog of war and otherwise defeat friction that previous generations could only imagine. Modern strategists can see over the hill, communicate instantaneously with deployed forces around the world, and in principle rapidly destroy enemy assets wherever they are located—at least in fine weather and provided no innocent

civilians are colocated with the targets. The problem is that war can't be reduced simply to the bombardment of a passive enemy.

Despite electro-mechanical marvels it is no easier—in fact it is probably harder—to perform well as a strategist today than a century ago. Consider the utility of railroads, telegraph, radio, and aircraft to the strategist. The poison in the chalice of each is that other polities have acquired them; each has distinctive vulnerabilities and worse (recall the radio intercepts of World Wars I and II); and none of them can address the core of the strategist's basket of difficulties.

Strategy is not really about fighting well, important though that is. To follow Clausewitz, it is about "the use of engagements for the object of the war."[11] The fog of war and frictions that harass and damage strategic performance do not comprise a static set of finite challenges which can be attrited by study, let alone by machines. Every new device and mode of war carries the virus of its own technical, tactical, operational, strategic, or political negation.[12]

To tackle the fog and friction of strategy and war is not akin to exploring unknown terrain, with each expedition better equipped than the last to fill in blanks on the map. The map of fog and friction is a living, dynamic one that reorganizes itself to frustrate the intrepid explorer.

Why so difficult?

Field Marshal Helmuth Graf von Moltke—victor in the wars of German unification—had it right when, in *Instructions for Superior Commanders*, he wrote that "strategy is the application of common sense to the conduct of war. The difficulty lies in its execution. . ."[13] The elder Moltke was rephrasing the words of the master. Clausewitz advises that "everything in strategy is very simple, but that does not mean that everything is very easy."[14] Why should that be so? Five reasons can be suggested.

First, strategy is neither policy nor armed combat; rather it is the bridge between them. The strategist can be thwarted if the military wages the wrong war well or the right war badly. Neither experts in politics and policymaking nor experts in fighting need necessarily be experts in strategy. The strategist must relate military power (strategic effect) to the goals of policy. Absent a strategic brain—as was the case of the United States and NATO vis-à-vis Bosnia and Kosovo—one is left with an awkward alliance of hot air (policy statements) and bombardment possibilities (the world is my dartboard view of aerial strategists).[15] Strategy is difficult because, among other things, it is neither fish nor fowl. It is essentially different from military skill or political competence.

Second, strategy is perilously complex by its very nature. Every element or dimension can impact all others. The nature of strategy is constant throughout history but its character continually evolves with changes in technology, society, and political ideas. Success in strategy is not really about securing a privileged position in any one or more of its dimensions—such as technology, geography, or leadership—because it is always possible an enemy will find ways to compensate for that strategic effect from its special strengths. This is a major reason why information dominance in a technical-tactical sense cannot reliably deliver victory. Triumph in war does not correlate with superior technology nor mastery in any allegedly dominant dimension of conflict.

Third, it is extraordinarily difficult, perhaps impossible, to train strategists. Consider these words of Napoleon Bonaparte:

> Tactics, evolutions, artillery, and engineer sciences can be learned from manuals like geometry; but the knowledge of the higher conduct of war can only be acquired by studying the history of wars and the battles of great generals and by one's own experience. There are no terse and precise rules at all; everything depends on the character with which nature has endowed the general, on his eminent qualities, on his deficiencies, on the nature of the troops, the technics or arms, the season, and a thousand other circumstances which make things never look alike.[16]

Napoleon was in a position to know. Like Hannibal he was good at winning battles, but he failed catastrophically as a strategist. Like Imperial Germany, Nazi Germany, and the Soviet Union, Imperial France pursued political goals that were beyond its means. That is a failure in strategy.

Basic problems in training strategists can be reduced to the fact that no educational system puts in what nature leaves out, while the extraordinary competence shown by rising politicians or soldiers in their particular trades is not proof of an aptitude for strategy. The strategist has to be expert in using the threat or use of force for policy ends, not in thinking up desirable policy ends or in fighting skillfully.

Fourth, because strategy embraces all aspects of the military instrument (among others), as well as many elements of the policy and society it serves, the maximum possible number of things can go wrong. To illustrate, sources of friction that can impair strategic performance include those familiar to the military realm (incompatibilities among the levels of military activity and specialized functions such as operations, logistics, and weapons production) and, conceivably the most lethal of all, a mismatch between policy and military capabilities. In the world of strategists, as opposed to that of tacticians, there is simply much more scope for error.

Finally, it is critical to flag an underrecognized source of friction, the will, skill, and means of an intelligent and malevolent enemy. Andre Beaufre defines strategy as "the art of the dialectic of force or, more precisely, the art of the dialectic of two opposing wills using force to resolve their dispute."[17] Recall Clausewitz's dictum: "War is thus an act of force to compel our enemy to do our will."[18] Yet it is easier to theorize about new ways of prevailing than to speculate honestly and imaginatively about possible enemy initiatives and responses.

Further thoughts

There is a sense in which this article reinvents the wheel. It is no great achievement to appreciate that strategy is difficult to do well. Indeed, my point is not dissimilar from that made by Lawrence Freedman, who takes 433 pages in *The Evolution of Nuclear Strategy* to state that there is no truly strategic solution to the dilemmas of nuclear strategy.[19] When armchair strategists tell military practitioners that their task is difficult on the level of strategy, they should not expect much praise. After all, strategy does have to be done.

Academics can vote undecided and write another book. Practicing strategists must make decisions regardless of the uncertainty.

Next, one must stress the strategic ignorance of even practical people. Clausewitz wrote:

> It might be thought that policy could make demands on war which war could not fulfill; but that hypothesis would challenge the natural and unavoidable assumption that policy knows the instrument it means to use.[20]

The challenge is that before undergoing trial by battle, no one really knows how effective military power will be. Every passage of arms remains unique. A capability that appears lethally effective in peacetime exercises will not translate automatically into a violent elixir to solve political issues. That the Armed Forces appear lethally potent against a conventional enemy in open warfare could prove irrelevant or worse in urban areas. In peacetime, militaries train against themselves, and that has to comprise a major source of uncertainty concerning future effectiveness.

It is vital to recognize potential tension in three sets of relationships: between politicians and commanders, between commanders and planners, and between commanders and theorists (recall Phormio's efforts to educate Hannibal). Military professionals must simplify, focus, decide, and execute. Politicians, by virtue of their craft, perceive or fear wide ramifications of action, prefer to fudge rather than focus, and like to keep their options open as long as possible by making the least decision as late as feasible. Although commanders are gripped by operational requirements, planners—especially if unschooled by real operational experience—are apt to live in an orderly world where a model of efficiency and compromise is acceptable, indeed is a driver.

The tension becomes acute when a soldier who is only a planner finds himself in a position of high command. The classic example is Dwight Eisenhower, a superb staff officer and military politician who lacked the experience and the aptitude for command, let alone supreme command.[21] As to the terrain between theorists and doers of strategy, the former are skilled in the production of complexity and are unlikely to enjoy the empathy for operational realities that makes strategic ideas readily useful. For example, the nuclear strategist might conceive of dozens of targeting options yet be unaware that his theory passed its "culminating point of victory"—actually its "culminating point of feasibility"—at a distinctly early stage. A President thoroughly uninterested in matters of nuclear strategy until suddenly confronted at dawn some Christmas with the necessity for choice can't likely cope intellectually, morally, politically, and strategically with many options. Probably he would find it useful to have alternatives: shall we go now, shall we go later, shall we go big, or shall we go small. But those broad binaries may be close to the limits of Presidential strategic thinking. Many strategists have presented seemingly clever briefings to policymakers and senior officers whose eyes crossed and brains locked at the sight of the third PowerPoint slide.

The many reasons why strategy is so difficult to do well can be subsumed with reference to three requirements. For strategic success:

- forces must be internally coherent, which is to say competently joint
- be of a quantity and provide a strategic effect scaled to the tasks set by high policy
- be employed coercively in pursuit of military objectives that fit political goals.

Competence cannot offset folly along the means–ends axis of strategy. Military history is littered with armies that won campaigns in the wrong wars.

Since the future is unforeseeable—do not put faith in the phrase "foreseeable future"—we must use only assets that can be trusted. Specifically, we plan to behave strategically in an uncertain future on the basis of three sources of practical advice: historical experience, the golden rule of prudence (we do not allow hopes to govern plans), and common sense. We can educate our common sense by reading history. But because the future has not happened, our expectations of it can only be guesswork. Historically guided guesswork should perform better than one that knows no yesterdays. Nonetheless, planning for the future, like deciding to fight, is always a gamble.

To conclude on a positive note, remember that to succeed in strategy you do not have to be distinguished or even particularly competent. All that is required is performing well enough to beat an enemy. You do not have to win elegantly; you just have to win.

Notes

1 J.F. Lazenby, *Hannibal's War: A History of the Second Punic War* (Warminster, UK: Aris and Phillips, 1978), p. 275.
2 Carl von Clausewitz, *On War*, edited and translated by Michael Howard and Peter Paret (Princeton: Princeton University Press, 1976), pp. 566–73. See also Antulio J. Echevarria II, "Clausewitz: Toward a Theory of Applied Strategy," *Defense Analysis*, vol. 11, no. 3 (December 1995), pp. 229–40.
3 Clausewitz, *On War*, p. 204; Antoine Henri de Jomini, *The Art of War* (London: Greenhill Books, 1992), p. 70.
4 This argument is the central theme of Colin S. Gray in *Modern Strategy* (Oxford: Oxford University Press, 1999).
5 Clausewitz, *On War*, pp. 119–21.
6 Samuel B. Griffith, *On Guerrilla Warfare* (New York: Praeger, 1961), p. 31.
7 Rudolf von Caemmerer, *The Development of Strategical Science During the Nineteenth Century*, translated by Karl von Donat (London: Hugh Rees, 1905), pp. 171–72.
8 Holger H. Herwig, *The First World War: Germany and Austria-Hungary, 1914–1918* (London: Arnold, 1997), pp. 96–106, is excellent.
9 Williamson Murray, "Does Military Culture Matter?" *Orbis*, vol. 43, no. 1 (Winter 1999), p. 37.
10 See Martin van Creveld, *Fighting Power: German and U.S. Army Performance, 1939–1945* (Westport, Conn.: Greenwood, 1982).
11 Clausewitz, *On War*, p. 128.
12 For lengthy musings, see Edward N. Luttwak, *Strategy: The Logic of War and Peace* (Cambridge: Harvard University Press, 1987). Luttwak argues that what works well today may not tomorrow exactly because it worked well today. Because Clausewitz insists war is essentially a duel, one may face an enemy capable of reacting creatively to one's moves and perhaps even anticipate them.
13 Caemmerer, *Strategical Science*, p. 276.
14 Clausewitz, *On War*, p. 178.
15 This is a fair reading of the underlying premise of airpower theory. See Giulio Douhet, *The Command of the Air*, translated by Dino Ferrari (New York: Arno Press, 1972), p. 50; and John A. Warden III, "Success in Modern War: A Response to Robert Pape's *Bombing to Win*," *Security Studies*, vol. 7, no. 2 (Winter 1997/98), pp. 174–85. To the air strategist targeting is strategy.

16 Caemmerer, *Strategical Science*, p. 275.
17 André Beaufre, *An Introduction to Strategy* (London: Faber and Faber, 1965), p. 22.
18 Clausewitz, *On War*, p. 75.
19 Lawrence Freedman, *The Evolution of Nuclear Strategy* (New York: St. Martin's Press, 1981), p. 433.
20 Clausewitz, *On War*, p. 75.
21 Dominick Graham and Shelford Bidwell, *Coalitions, Politicians and Generals: Some Aspects of Command in Two World Wars* (London: Brassey's, 1993), chapters 9–16, is pitilessly Anglo-Canadian in its critical view of Eisenhower as commander and serves as a partial corrective to the "patriotic" school of military history of the European campaign that finds undue favor among American writers such as Stephen E. Ambrose in *The Victors: Eisenhower and His Boys: The Men of World War II* (New York: Simon and Schuster, 1998).

This page intentionally left blank

Part II

Interpretation of the classics

Introduction

The four essays in this section offer readers selections from some of the most significant works of classical strategic thought. They should be considered in relation to Carl von Clausewitz's *On War*, as the most important work of strategy and the starting point for any exploration of strategic theory.

The first selection is Michael I. Handel's guide to reading *On War*. Handel, who taught in the Strategy and Policy Department at the US Naval War College, was one of the world's foremost experts on Clausewitz. He developed "Who is Afraid of Carl von Clausewitz" to guide students through *On War*, which can be daunting to the uninitiated. The essay provides a roadmap for reading the book and comprehending the central concepts that it contains.

The second selection is from Lionel Giles's classic translation of Sun Tzu's *The Art of War*. The volume, written some 2,500 years ago, represents one of the oldest and most influential works of strategy. In contrast to Clausewitz, who views war as a violent clash of wills, Sun Tzu ("Master Sun") extols victory without bloodshed as the ideal, writing that "to fight and conquer in all your battles is not supreme excellence; supreme excellence consists in breaking the enemy's resistance without fighting".

Sun Tzu sees war as a search for comparative advantage. He believes that success in war is less a matter of destroying the adversary's army and more one of shattering his will to fight. In his view, the most successful strategies are those that emphasize psychology and deception.

To Sun Tzu, information represents a key to success in war. As he puts it in one of his most famous aphorisms, "If you know the enemy and know yourself, you need not fear the result of a hundred battles." Typically, however, such pithy injunctions conceal the many challenges that make it difficult to understand one's self and one's adversary, including imperfect information, ethnocentrism and mirror imaging.

Whereas Clausewitz writes that destroying the enemy's army is most often the key to victory in war, Sun Tzu recommends that the best alternative is to attack the enemy's strategy. The next best alternative is to attack the opponent's alliances. Destroying the enemy's army ranks third on his list of preferred strategies.

The third selection is from Basil H. Liddell Hart's book, *Strategy*. Liddell Hart (1895–1970), at times a British army officer, journalist and analyst, echoes Sun Tzu in his

argument that "The perfection of strategy would be … to produce a decision without any serious fighting." He believes that the aim of strategy should be psychological dislocation – the act of creating in an adversary's mind the sense that he is trapped and defeat is imminent. This leads to what Liddell Hart termed the strategy of the indirect approach: in his view, in any contest of wills, the line of least expectation is the line of least resistance.

The final selection is from Thomas C. Schelling's *Arms and Influence*. Schelling, a Professor at the University of Maryland who won the 2005 Nobel Prize in Economics, can be credited with developing the theory of strategic coercion. He argues that "the power to hurt" gives an actor coercive leverage. Schelling notes that whereas brute force must be used to succeed, the power to coerce is most successful when threatened. To coerce successfully, one needs to know what an adversary values. One needs the adversary to understand what behaviour of his will cause violence to be inflicted and what will cause it to be withheld. Coercion also requires that the belligerents have at least some common interest. Although Schelling identifies instances of coercion throughout history, he argues that the advent of nuclear weapons has made coercion the only feasible strategy. As he puts it, "Not only *can* nuclear weapons hurt the enemy before the war has been won … but it is widely assumed that in a major war that is *all* they can do."

Although Schelling developed his theory of coercion with reference to nuclear weapons, it has been applied more broadly. Coercion was central to the US air campaign over North Vietnam during the Vietnam War, for example, as well as the NATO air campaign over Serbia during the 1999 Kosovo War.

Study questions

1   Which of Clausewitz's strategic concepts are most useful in understanding modern wars? Which are least useful?
2   What are the main contributions of Sun Tzu to strategic theory?
3   What do political and military leaders need to do to ensure that battlefield victory translates into strategic success?
4   To what extent is Liddell Hart's "strategy of the indirect approach" valid today?
5   As Schelling puts it, "Violence is most purposive and most successful when it is threatened and not used." Do you agree or disagree, and why?

Further reading

Clausewitz, Carl von, *On War*, edited and translated by Michael Howard and Peter Paret (Princeton, NJ: Princeton University Press, 1989).
Corbett, Julian S., *Some Principles of Maritime Strategy* (London: Longmans Green, 1911).
Danchev, Alex, "Liddell Hart and the Indirect Approach", *Journal of Military History* 63, no. 2 (1999), 313–337.
Gray, Colin S., *The Strategy Bridge: Theory for Practice* (Oxford: Oxford University Press, 2010).
Handel, Michael I., *Masters of War*, 3rd edn (London: Frank Cass, 2001).
Heuser, Beatrice, *The Evolution of Strategy: Thinking War from Antiquity to the Present* (Cambridge: Cambridge University Press, 2010).

Holmes, Terrence, "Planning versus Chaos in Clausewitz's *On War*", *Journal of Strategic Studies* 30, no. 1 (February 2007), 129–151.

Honig, Jan Willem, "Interpreting Clausewitz", *Security Studies* 3, no. 3 (March 1994), 571–580.

Kaiser, David, "Back to Clausewitz", *Journal of Strategic Studies* 32, no. 4 (August 2009), 667–685.

Liddell Hart, Basil, *Strategy: The Indirect Approach* (London: Faber and Faber, 1954).

Luttwak, Edward N., *Strategy: The Logic of War and Peace*, revised and enlarged edn (Cambridge, MA: Belknap Press, 2001).

Paret, Peter, ed., *Makers of Modern Strategy: From Machiavelli to the Nuclear Age* (Princeton, NJ: Princeton University Press, 1986).

Strachan, Hew, *Clausewitz's On War: A Biography* (New York: Grove Press, 2008).

Wylie, J.C., *Military Strategy: A General Theory of Power Control* (Annapolis, MD: Naval Institute Press, 1989).

This page intentionally left blank

4 Who is afraid of Carl von Clausewitz?

A guide to the perplexed

Michael I. Handel

Clausewitz's seminal work, *On War*, may not be easy to read, but it is also not as difficult as many assume at first glance. The interested reader must, however, be willing to invest considerable time in the study of this text. This is not a book that can or must be understood upon a first reading; some passages or sections of the book are obscure and susceptible to more than one interpretation, while others require concentration, **repeated reading** (particularly Book 1, Chapter 1), and classroom analysis. Indeed, part of the professional military value of reading *On War* is that it forces the reader to ponder Clausewitz's ideas. By engaging in this rewarding process, the reader develops his own concepts and emerges with more profound insights into the various aspects of warfare.

On War should not, however, be treated as though its classic nature has rendered it virtually immune to criticism. Like all works of such stature, it will always be a source of many eternally relevant, original thoughts on warfare—but at the same time, it includes some ideas that were debatable from the beginning, and still others that became obsolete as a result of subsequent technological and political developments.

Apparent contradictions in the text should not cause the reader undue concern. In the first place, war's intrinsically human underpinnings mean that it is indeed fraught with unavoidable, genuine contradictions such as that between *the principle of continuity* and *the concept of the culminating point of victory (or the attack)*. The former principle suggests the need to exploit a victory to the utmost by continuing the offensive advance without interruption, while the latter states that continuing beyond a certain point in the offensive is counterproductive and brings defeat. (See M. Handel, *Masters of War*, 2nd rev. and expanded edition, Chapter 11, pp. 99–120.) This type of contradiction between two concepts in war can only be addressed by examining the specific circumstances in each case.

Other contradictions are only apparent and can be explained, for example, by the different levels of analysis in question. (See Handel, *Masters of War*, Appendix A, "Contradiction and Paradox in the Theory of War," pp. 181–183.) Thus, Clausewitz frequently states that most intelligence is unreliable while elsewhere, he observes that it can sometimes be reliable. This is not a genuine contradiction because most of his comments on intelligence refer to the lower tactical and operational levels where the heat of battle and pressure of time often render intelligence unreliable even today. His positive remarks on this subject, however, refer to the strategic level, where there is more time to verify movement and other types of information.

Since war is not an exact science, Clausewitz is also careful to note exceptions when he makes an observation or recommendation. Therefore, the identification of such so-called flaws in *On War* actually enhances one's understanding of war as a human and social phenomenon. Furthermore, any theoretical work of this type that is devoid of apparent or real contradictions could never represent a realistic analysis of the real world of war.

The reader must also remember that this guide addresses *On War* **as it stands** and is not therefore concerned with the intellectual process, the so-called "transformation of ideas," through which Clausewitz arrived at the final text.

Book 2: On the Theory of War

My first recommendation is that the reader begin *On War* NOT with Book 1 Chapter 1, but with Book 2 Chapter 2, "On the Theory of War," in particular pp. 136–141 and pp. 146–147. In this very "modern" chapter (still relevant to anyone studying the social sciences), Clausewitz lays the methodological foundation for the entire book. He argues that given human nature, war cannot be studied as though it is an exact science (what he calls a "positive doctrine"). In fact, he concludes that war is neither an art nor a science but "an act of human intercourse" or what we would call today a social science (pp 148–149). Therefore, the student of war and military affairs should not expect to receive specific guidance for action from books such as *On War. On War* is not an instruction manual, nor can there be such a book for the highest levels of studying war (i.e., policy, strategy, or even the operational level). Although war can be studied systematically, it is ultimately an art that requires creative (not dogmatic) solutions reflecting specific or unique situations.

Next the student should read Chapters 5 and 6 of Book 2 ("Critical Analysis" and "On Historical Examples"). These chapters further expand some of the ideas developed in Chapter 2 and discuss the very methods used to teach in the Department of Strategy and Policy of the Naval War College, namely the extensive use of the critical analysis of historical case studies.

Finally, remember that it is not necessary to understand all of the finer details of Clausewitz's argument, but rather to think critically about the lessons taught by military history. Why is there no substitute for the detailed examination of past wars? How is past experience relevant and what are its limitations? (Each historical case has many unique aspects which will never be repeated in precisely the same way.) What, for example, is the impact of technological change on the value of the historical case study method?

Book 1: On the Nature of War

Now you are ready to begin reading Chapter 1 of Book 1, which is the **most important chapter of the entire book**. First of all, it contains the essence of most of Clausewitz's original ideas and establishes the framework for the entire book. Second, it is the only chapter he edited in final form before his death. Unfortunately this also happens to be the most difficult chapter in the book! Ideally, this chapter should be **read more than once**, for it cannot be fully understood in a single reading. Each reading of

this chapter, which is infinitely rich with ideas, gives the student a new "layer" of understanding. Indeed, had Clausewitz written only this chapter and nothing else, his place as the most important theorist of war would still remain unchallenged. (Refer to the "flow chart" of Clausewitz' ideas and discussion in Chapter 1, which is reproduced at the end of this chapter.)

Here are a number of specific suggestions:

Clausewitz's opening statement of Book 1, Chapter 1, Section 1 of *On War*, makes it clear right from the start why war cannot be studied as an exact science. ". . . In war," he states, "more than in any other subject we must begin by looking at the nature of the **whole;** for here more than elsewhere the part and the whole must always be thought of together," (i.e. unlike in the natural sciences, different variables or factors cannot be isolated and studied independently). The parts can only be studied in the context of the whole, as a **"gestalt"** (or synergism) (he refers to war as a **gestalt** also among others on pp. 61, 63, 77; 137; 158; 183). (Mao Tse-Tung in his military writings include an extensive discussion of war as a gestalt.)

Chapter 1, Section 2, p. 75: Think about his brief definition of war. Why is it so important, and what does it tell us about the purpose of all wars?

Note that the definition of war implies the survival rather than the total destruction of the enemy. Also note that what distinguishes war from any other activity is the use of force and bloodshed. This definition must be read along with another definition of war presented in Book 2, Chapter 3: "War is a clash between **major interests**, which is resolved by bloodshed—that is the **only way** in which it differs from other conflicts" (p. 149). Elsewhere, Clausewitz offers yet another definition: "Essentially, war is fighting, for fighting is the only effective principle in the manifold activities generally designated as war" (p. 127).

Acknowledging the general tendency to disregard international law and custom, Clausewitz not only sees war as inevitable but also as a common and legitimate instrument states must sometimes use to protect or enhance their vital interests.

Chapter 1, Sections 3–5, pp. 75–77: Here Clausewitz discusses war not as it is in reality, but as it is in theory, in the "abstract." He refers to war in the abstract or what war should *logically* be as "absolute war," "war in theory," "war in pure theory," "the natural tendency of war," "play of imagination," or "the strict law of inherent necessity." Here he uses a well-known technique from the social sciences called the **ideal-type method** in which the writer distills the essential characteristics of a social phenomenon from its "messier" reality.

Most of the value derived from the ideal-type method, though, comes from **comparing the ideal version with reality and then asking how and why the two differ.** Clausewitz engages in these "modifications in practice," as he calls them, for the rest of the chapter (i.e., Sections 6–23). (See Figure 4.3.)

By asking why war in practice differs from war in theory (from what it logically **ought to be**) Clausewitz develops his most important ideas about war! (This is very similar to the Newtonian method of first discussing the laws of physics in a simplified, **frictionless world** and later adjusting the theory to a world of friction, or to the economists' reference to a **perfectly free market**). As a careful reading will show, this method leads Clausewitz to develop such concepts as friction and uncertainty in war; the rational

(i.e., political) direction of war; and the differences (or asymmetry) between the offense and defense, total and limited war, and so on.

As you read this chapter (and the rest of the book), it is important not to confuse the ideal-type of war (i.e., war in the abstract, war in theory, a pure concept of war, etc.) with real war (or war in practice). In most instances Clausewitz tells the reader what type of war he is discussing, but not always.

Another caveat is in order. The reader must always ask himself at each point what is the level of analysis that Clausewitz is addressing. For example, Chapter 6 of Book 1 on Intelligence in War (pp. 117–118) provides truly outstanding insight into the problems of tactical and lower level value and use of intelligence in war. Clausewitz's conclusions are pessimistic. Most intelligence on the battlefield he believes is contradictory and unreliable. Insofar as tactical/operational intelligence was concerned at his time, before the age of real time communications became available, his observations were accurate and sensible. The same cannot be said, however, on Intelligence on the strategic level. Thus we can observe that whenever elsewhere in the book Clausewitz discusses problems related to strategic intelligence he argues that it is much more reliable. There is of course no contradiction here. What is true on the tactical or the operational level is not true on the strategic level. The problem is (a) that Clausewitz never explicitly states what level he is addressing and (b) that he moves from one level of analysis to another without warning (i.e. he begins the discussion in Chapter 6 of Book 1 on intelligence by providing a definition of intelligence on the strategic level, and then goes on to the next paragraph and continues the rest of the discussion on the lower tactical level!) and finally (c) the reader must remember that on most of the occasions that Clausewitz uses the word strategy he actually is talking of what we today would consider the operational level of war.

Another example would further classify the problem. Clausewitz as can be seen as a great admirer of military commanders that are ready to take high risks. He believes that by taking high risks commanders can dictate the pace of battle confuse the enemy and so on (see Chapter 6 of Book 3 Boldness pp. 190–193). What is true and commendable on the operational may be a great mistake on the strategic level. No doubt Clausewitz would insist that the political or military leader ought to be much more careful on the strategic level. While a mistake on the battlefield can be retrieved—a strategic mistake may be irreversible.

THE THREE LEVELS OF WAR
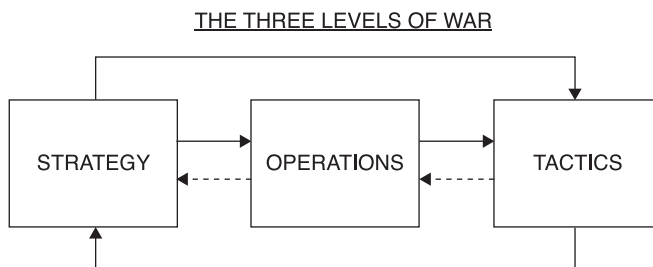
Figure 4.1

Let me begin with Clausewitz's description of war in theory. In Sections 3 to 5, Clausewitz identifies three inherent types of interaction in war that **in theory** (and sometimes in practice) lead to an escalation to the extreme. These are:

1 **The Maximum Use of Force. (*Physical force*).** In order to be assured of victory, the opponents will theoretically employ all available force against each other. This first case of interaction is directly related to other principles developed later in *On War* such as the maximum concentration of forces in space and time, and the importance of achieving numerical superiority in battle (see Book 3, Chapters 8, 11, 12, and 14, and Book 5, Chapter 12). This is a good example of how Clausewitz's concepts and description of the ideal-type of war in theory are, later in the book, applied to war in reality.

2 **The Aim Is To Disarm The Enemy. (*The objective of war; or war as a zero-sum game*)** The second case of interaction is closely connected to the first. It states that each side will continue fighting until its enemy has been disarmed and is no longer a threat. In theory only one side can win and war is fought uninterruptedly as a zero-sum game. (The second case of interaction is also closely related to the principle of continuity, see p. 7. Clausewitz returns to this theme in Chapter 2 of Book 1, see p. 91 and also in Book 8, Chapter 2, p. 579.)

3 **The Maximum Exertion of Strength. (*Intangible factors; or non-material force multipliers, or what he refers to as "moral forces"*)** The third case of interaction suggests that in addition to mobilizing and using all possible physical/material force, the opponents simultaneously marshall all of the moral and spiritual forces available (e.g., motivation, dedication, and spirit of sacrifice). In contrast to the physical forces, which are relatively easy to estimate, the equally important moral forces are more difficult to gauge. When one side has reached the limits of its material strength, it can always add to its military efforts by mobilizing all possible moral strength. Moral forces thus act as a force multiplier, (or force divider), making estimates and net assessment far more complex. The balance of power must therefore be estimated (in Clausewitz's own words) as follows:

THE TOTAL POWER TO WAGE WAR
(OF THE TWO OPPONENTS)

SIDE A		SIDE B
MEANS X WILL	=	MEANS X WILL
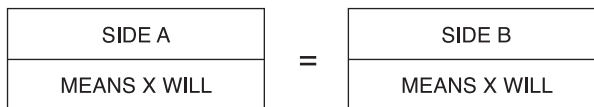
Figure 4.2

Throughout *On War*, Clausewitz returns to the discussion of **moral forces** (e.g., will, motivation, creative genius, intuition, patriotism and all other non-tangible factors that affect the course of a war). (See, for example, Book 1, Chapter 3, pp. 136–138); Book 2, Chapter 2, pp. 136–137 Book 3, Chapters 3 and 4, pp. 184–186).

For the remainder of the chapter Clausewitz explains why the extreme nature of war in theory is moderated in reality by factors such as political (rational) calculations; the inability to use all forces at once; the difference in strength between the offense and defense; insufficient or inaccurate intelligence on the relative strength of the opponent; and aversion to risk or other psychological considerations. (See discussion below.) (For a detailed explanation see also *Masters of War* Appendix C pp. 205–215.)

In Chapter 1, Clausewitz tacitly introduces a **comprehensive framework for the study of war.** (Section 5, p. 77) Here he argues that war always includes rational and non-rational elements, physical (or material) and moral (or spiritual, non-material) factors, planning, and control, as well as uncertainty, friction, and chance. Such a framework is eternal because all of these complementary and at times seemingly contradictory elements deal with every dimension of warfare.

This framework is succinctly and elegantly summarized in his famous "trinity" (Chapter 1, Book 1, Section 28, p. 89) in which the **passions**, (people); **probability and chance**, (military); and **objectives, and rational calculations**, (government) can form countless unique combinations reflecting the character of each war.

Note that Clausewitz's framework for the study of war and his analysis throughout the book fully recognizes the importance of *non-rational* (as well as rational) factors such as the charisma, creativity, and *coup d'oeil* of the military leader; the morale and motivation of the people; the influence of danger and battle on the ability to make rational calculations under pressure; and the effect of uncertainty, friction, chance, and insufficient information/intelligence on the ability to make rational calculations. I mention this because John Keegan, in his most recent book *A History of Warfare* (New York: Knopf, 1993), erroneously states that Clausewitz's approach to war is entirely or primarily based on rational calculations. This is plainly wrong. (For an explicit statement on the impossibility of conducting war as a purely rational activity, see Book 8, Chapter 2, p. 579.)

LIMITS ON THE RATIONAL CONDUCT OF WAR

WAR MUST BE CONDUCTED AS RATIONALLY AS POSSIBLE:

• CLEAR OF OBJECTIVES

• COST/BENEFIT CALCULATIONS

• CORRELATION OF ENDS AND MEANS

• COLLECTION OF INTELLIGENCE

• OTHER

• FRICTION
• CHANCE
• POOR INTELLIGENCE
• DECEPTION
• PASSIONS & HATE
• IRRATIONAL POLITICAL GOALS
• THE PROBABILISTIC NATURE OF WAR
• OTHER

LIMITS ON THE RATIONAL CONDUCT OF WAR

Figure 4.3

When reading Chapter 1 of Book 1 also consider: How or why does politics modify war in theory by emphasizing the rational (instrumental) purpose of war (as already indicated in his definition of war)? (Remember that in war in theory **the maximum use of force** is not based on rational calculations but on the inherent dynamic nature of interaction.) Devote some tim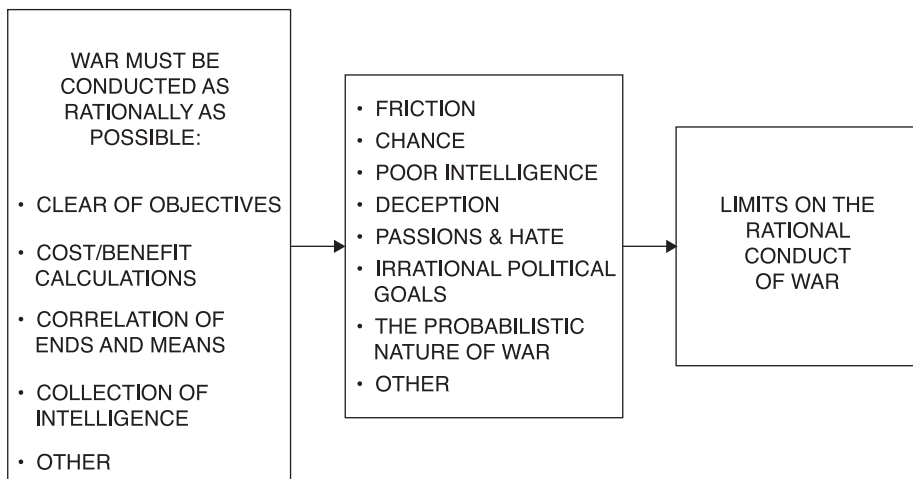e to thinking about Section 27 (p. 88), the second paragraph, where he stresses the importance of understanding the nature of the **war** a nation is about to get involved in. (See discussion below pp. 61–62.) How does the question of the kind of war (Section 27) relate to the following section (Section 28), the trinity (or triad) and the observation that war is "like a chameleon?" (Note that Clausewitz's comparison of the **mercurial** nature of war to a chameleon is analogous to Sun Tzu's comparison of war to **water**.) "And as water has no constant form, there are in war no constant conditions." (Sun Tzu *The Art of War*, Chapter 6, p. 101.) We will return to this question throughout the course. Section 27 (on the importance of understanding the *diverse* nature of war) and Section 28 in which Clausewitz develops his "Trinitarian analysis" are closely related, as the "Trinitarian analysis" establishes the most important elements in defining or describing the *diverse* nature of each war. (See discussion below, pp. 62–63.)

How does Clausewitz move from war in theory to war in practice? How does he show that in reality, war rarely follows the dialectics of the extreme? (In Book 7, Chapter 1, Clausewitz explains the dialectical method as he sees it: ". . . Where two ideas form a true logical antithesis, each complementary to the other, then fundamentally each is implied in the other. If the limitations of our mind do not allow us to comprehend both simultaneously, and discover by antithesis the whole of one in the whole of the other, each will nevertheless shed enough light on the other to clarify many of its details.") (p. 523). (This is similar to the idea of yin and yang.)

In Section 6, Clausewitz begins by discussing the necessity of a correct transition from the theoretical world to the real world. In Section 7, he observes that since the enemy is not a total unknown in most cases, a state does not have to use **all** of its forces (as noted in the first case of interaction) but only the amount needed to do the job. Next he reasons that even if one **could** use all of the forces at his disposal, such forces could never realistically be concentrated in one place at one time (Section 8).

Section 9 is one of the shortest – and most important in the book. It states that even if one side achieves a **military victory**, such a victory is rarely final. This is because the defeated enemy who does not accept the result will simply wait for a better time to fight again. **Consequently, the maximum use of military force is only a necessary but not a sufficient condition for final victory; diplomacy and political wisdom are the "missing ingredients" needed to consolidate the results achieved in battle.** In reality, therefore, it is wiser to rely on the combination of **adequate** strength **and** diplomacy. Through the modifications of war in theory as outlined in Sections 7, 8, and 9, the reader is able to follow Clausewitz's transition from a war of absolutes to his analysis of war in reality in Section 10.

In Section 11, Clausewitz reintroduces the political objective in war: If the absolute war is confined to the realm of theory, what actually determines the use of force in war? *The political authorities and not the inherent dynamics of war*, determine what the objectives are, and what achieving a given objective is worth in terms of the military resources to be invested. This, in turn, determines how much counterforce the enemy will have to
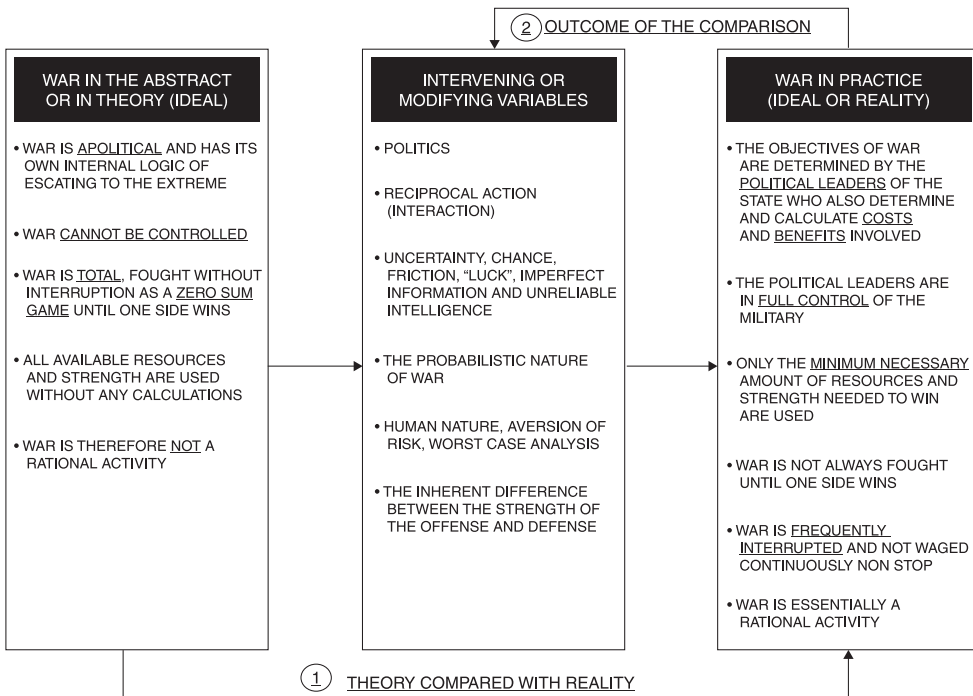
WAR IN THE ABSTRACT OR IN THEORY (IDEAL)	INTERVENING OR MODIFYING VARIABLES	WAR IN PRACTICE (IDEAL OR REALITY)
• WAR IS <u>APOLITICAL</u> AND HAS ITS OWN INTERNAL LOGIC OF ESCATING TO THE EXTREME • WAR <u>CANNOT BE CONTROLLED</u> • WAR IS <u>TOTAL</u>, FOUGHT WITHOUT INTERRUPTION AS A <u>ZERO SUM GAME</u> UNTIL ONE SIDE WINS • ALL AVAILABLE RESOURCES AND STRENGTH ARE USED WITHOUT ANY CALCULATIONS • WAR IS THEREFORE <u>NOT</u> A RATIONAL ACTIVITY	• POLITICS • RECIPROCAL ACTION (INTERACTION) • UNCERTAINTY, CHANCE, FRICTION, "LUCK", IMPERFECT INFORMATION AND UNRELIABLE INTELLIGENCE • THE PROBABILISTIC NATURE OF WAR • HUMAN NATURE, AVERSION OF RISK, WORST CASE ANALYSIS • THE INHERENT DIFFERENCE BETWEEN THE STRENGTH OF THE OFFENSE AND DEFENSE	• THE OBJECTIVES OF WAR ARE DETERMINED BY THE <u>POLITICAL LEADERS</u> OF THE STATE WHO ALSO DETERMINE AND CALCULATE <u>COSTS</u> AND <u>BENEFITS</u> INVOLVED • THE POLITICAL LEADERS ARE IN <u>FULL CONTROL</u> OF THE MILITARY • ONLY THE <u>MINIMUM NECESSARY</u> AMOUNT OF RESOURCES AND STRENGTH NEEDED TO WIN ARE USED • WAR IS NOT ALWAYS FOUGHT UNTIL ONE SIDE WINS • WAR IS <u>FREQUENTLY INTERRUPTED</u> AND NOT WAGED CONTINUOUSLY NON STOP • WAR IS ESSENTIALLY A RATIONAL ACTIVITY

(2) OUTCOME OF THE COMPARISON

(1) THEORY COMPARED WITH REALITY

Figure 4.4

employ. Accordingly, war is not just one uncontrolled clash of all forces available as the three cases of interaction imply; instead, it is a calculated **political** decision that can range from the extreme use of force to minor engagements. The analysis of war in reality (or in practice) in Chapter 1 thus clearly implies the existence and logic of limited war. (Clausewitz again defines the role of politics in war in Section 23, 24, 25 and 26. See also Book 8 in particular Chapters 6A and 6B where he further develops the same ideas.)

At this point, Clausewitz introduces another ideal-type concept – **the principle of continuity.** According to the **principle of continuity** (Sections 12–14), war **in theory** is fought without interruption until one of the sides is victorious. The reasoning is as follows: If one side has achieved an advantage he must or should exploit it until he wins (i.e., disarms the enemy (Section 4) and compels the enemy to do his will (Section 2)). In Sections 13 and 14, Clausewitz—in one of the most complicated discussions in *On War*—explains why war is frequently interrupted despite the logic of the **principle of continuity.** This leads him to an analysis of the differences in nature and strength between the offense and defense (Sections 15–17), and a discussion of how war is interrupted because of poor intelligence and the commander's tendency to make worst-case assumptions (Section 17). The asymmetry or inherent differences between the offense and defense combined with poor intelligence thus explain why the **principle of continuity** is ignored in reality. (For a detailed discussion, see Chapter 11 of the second revised edition of *Masters of War* by Handel.) Inaction in war, which is common in

practice but makes no sense in theory, thus further removes war from its absolute, theoretical form. Later in *On War*, Clausewitz expands on the practical consequences of inaction in war. (See Book 3, Chapter 16, pp. 216–219; and the second paragraph of Book 3, Chapter 2, p. 579.)

In Section 19 Clausewitz repeats his argument that war is a probabilistic affair. This, in turn, means that it always involves taking chances (Section 20) and therefore, is also always a gamble that requires courage (Section 21), an environment in which many military leaders feel more comfortable (Section 22). (He returns to this subject in Chapter 2 of Book 1, see p. 91.)

In Sections 23, 24, 25, and 26, Clausewitz introduces the political/policy factor for the second time. This is **the most important factor in modifying the absolute nature of war;** that is inherent theoretical tendency to escalate to the extreme as discussed in Sections 3, 4, and 5. Politics and policy determine the objectives of war—that is, the degree to which the state or group is ready to invest in achieving these ends. **Political calculations introduce the rational calculation of ends and means, costs and benefits.** (See also Book 1, Chapter 2, pp. 90–92. Clausewitz adds to his discussion of politics and policy in Book 8, particularly in Chapters 6, parts A and B (*On War*, pp. 603–610). These must be read in conjunction with Section 23–26 of Book 1, Chapter 1, pp. 86–88.) (Clausewitz in the tradition of **raison d'etat** assumes that the leaders of the state pursue a policy of enhancing the vital interests of the state (i.e. of its power vis-à-vis other states). He does not discuss the possibility that some leaders (e.g., Napoleon or Hitler) can pursue either personal or non rational goals. (But see his comments on the formation of policy in Book 8, Chapter 6B, pp. 606–607.)

In Section 25, Clausewitz argues that the higher the stakes in war and the more important the political stakes—the more violent war will tend to become; therefore it will also tend to approximate absolute war. (In Chapter 2 of Book 8 he in fact suggests that war in his time has come close to resembling the absolute war in theory, ". . . one might wonder" he says "whether there is any truth at all in our concept of the absolute character of war were it not for the fact that with our own eyes we have seen warfare achieve this state of absolute perfection," p. 580.) (See also pp 593, 603 and 610.) Conversely the more moderate or limited the political goals, the more war is removed from the ideal type of absolute war. The more violent a war becomes, the greater the chances that the political leaders will lose control over the course of the war as the passions of the belligerents and the war's own momentum take over. (As the ideal type of absolute war suggests.) This may create the impression that the more violent wars are **less** political than limited wars, but this is not really the case (i.e. **all wars**, whether unlimited (total) or limited, are equally political.)

Clausewitz rounds out the already rich and varied discussion in Chapter 1 with the introduction of two additional interrelated concepts. The first, introduced in Section 27, is the need to **understand the nature of war** before embarking upon it; and the second, in Section 28, is his famous **"Trinitarian analysis."** The first simply suggests that no two wars are ever the same: the participants, their respective morals, motivations, strategies, military doctrines, and weapons technologies change from one war to another and even in the course of a single war. **The statesman and strategist must therefore attempt to understand the unique character of each war.** Is it to

be short or long, conventional or low-intensity, hi-tech or low tech? How will the enemy react to his contemplated strategy? Such in-depth analysis is not an easy requirement since the interaction of two opponents in war is not a "linear" or predictable process. Note that there is substantial tension between Clausewitz's advice that one should attempt to grasp the nature of a future war on the one hand, and his emphasis on the problems of forecasting in a world rife with friction, uncertainty, chance, and lack of intelligence on the other. Rapid technological changes in modern weapon technology have made understanding the nature of war even more difficult than in Clausewitz's time. The process of trying to understand *the nature of a war* must begin before its outbreak and continue throughout its duration. Indeed, initial expectations about the nature of the imminent war provide the basis for preparations such as the procurement of suitable weapons, the best possible training, strategic planning, and the mobilization of the people—but these original assessments cannot remain static as the reciprocal action inherent in war takes over. Every interaction in war creates unexpected developments and friction that require political and military leaders to continuously reassess the nature of the war: upon finding that conditions have changed, such leaders may then have to change their military doctrine; modify plans; redouble their efforts to garner and maintain public support; rely less or more on technological means; or change their alliances. Understanding the nature of a war is thus a *dynamic, ongoing* process—not a static, one-time evaluation.

Since no belligerent ever precisely identifies the nature of the war in advance, the side that is more capable of learning from experience and less wedded to particular plans or doctrines will enjoy greater success. The advantage afforded by flexibility was recognized more explicitly by Mao Tse-tung than by Clausewitz:

> The process of knowing a situation goes on not only before the formulation of a military plan but also after. In carrying out the plan from the moment it is put into effect to the end of the operation, there is another process of knowing the situation, namely, *the process of practice*. In the course of this process, it is necessary to examine anew whether the plan worked out in the preceding process corresponds with reality. If it does not correspond with reality, or if it does not fully do so, then in light of our knowledge, it becomes necessary to form new judgments, make new decisions and change the original plans so as to meet the new situation. . . .
> Mao Tse-tung, "Strategy in China's Revolutionary War," *Selected Military Writings of Mao Tse-tung*, pp. 86–87.

Given the dynamic and ever changing nature of war it is not surprising to see that Clausewitz compares war to a *chameleon* that keeps on changing and adapting its colors to a constantly changing environment. It is interesting to note that Sun Tzu two millennia earlier made the same observation by comparing the changing nature of war to *water* which also continuously adapts itself to the changing nature of the terrain.

In the last section (28) of Chapter 1, Clausewitz introduces a conceptual framework that makes it easier to understand the nature of each war. Clausewitz argues that the behavior of each nation and its capacity to wage war depend on three groups of factors (tendencies as Clausewitz calls them): **the people, the military, and the**

government. When considering **the people**, one must examine, for example, **their motivation**, dedication, and support of their government. Of **the military**, one should ask how **good their leaders are, whether they obey government orders, and whether they develop suitable doctrines and are well organized.** And as for **the government**, it is **wise to investigate how rational or realistic its policies are, and how effective it would be in mobilizing the people's support for a prolonged** war. The three elements of the trinity—the people, the military, and the government—represent, or are an abbreviated code for, the tendencies underlined above. It must also be emphasized that these tendencies are not **exclusive only** to the people, the military, and the government and may in certain circumstances be better represented by other elements (e.g., at times the military or the "people" may be more rational and calculating than the political leadership or the political leader may be more passionate or full of hate than the people).

While Clausewitz states that ". . . the political aims are the business of the government alone" (p. 89). This clearly is not the case in a democracy where the people should and do have a great deal of influence on determining the aims of war.

The interrelationship of these three factors or "three aspects" of war will determine the way in which each country wages war. Think, for example, of the Vietnam War: Did the U.S. government define clear objectives for the war? Did it effectively mobilize the support of the American people? Did the U.S. military develop a suitable doctrine? Was the doctrine effectively adapted to changing circumstances on the battlefield? Was the government given the best possible advice by the military? Was the U.S. population united in its support of the government and for how long?

Comparing these three main factors for each participant in a war allows the strategist to make a more reliable forecast. For instance, in the Vietnam War, which population was more dedicated and ready to act? Which military was more adaptable and responsive to developments on the battlefield? The relationship among the three components of "the trinity" is *dynamic* and different in various types of war (i.e., the role of the people is *relatively* more important in guerrilla warfare than in conventional, hi-tech war).

"The trinity" includes *only* "non-material" or non-tangible factors, such as policy, organization, and motivation—and ignores war's material, technological, and economic dimensions. Clausewitz might have concluded that the material dimensions were not necessary for understanding the nature of war, or that they were a roughly comparable "given" for each belligerent. In any case, it is possible to criticize Clausewitz's approach with the observation that he does not pay enough attention to the material aspects of war. (On this, see Michael Handel, "Clausewitz in the Age of Technology," in Michael Handel, ed., *Clausewitz and Modern Strategy* (London: Cass: 1986), pp. 51–94.)

It must be noted that Clausewitz believed that the most important changes in war at this time were all *political* not material. ". . . These changes were caused by the new political conditions which the French Revolution created both in France and Europe as a whole, conditions that set in motion new means and new forces . . . the transformation of the art of war resulted from the transformation of politics" (p. 610; also p. 593).

It is the **interaction between all the "trinities"** of the belligerents that defines the particular nature of each war.
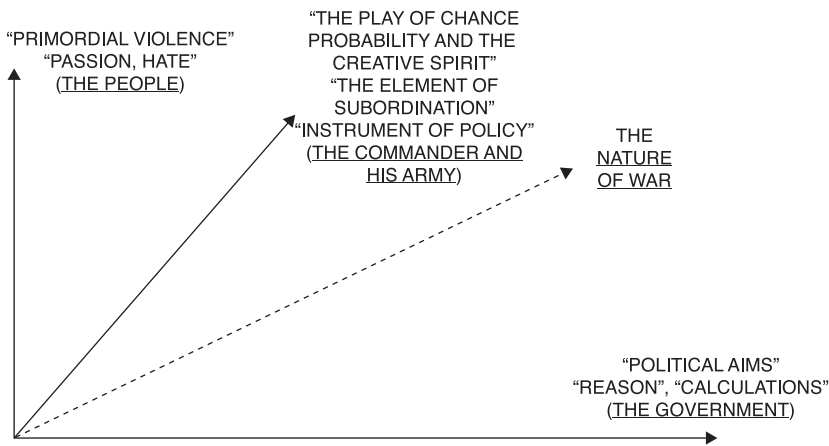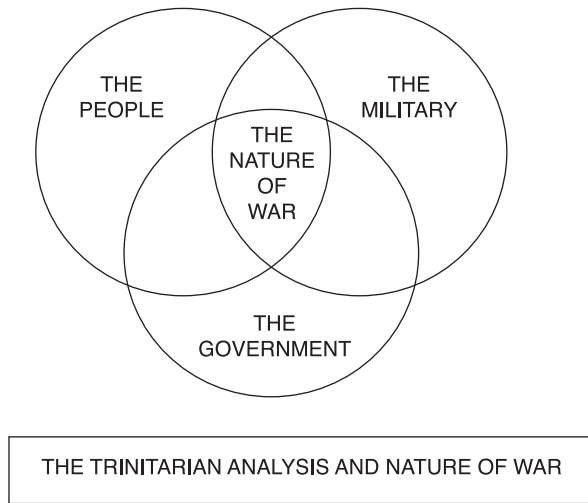
Figure 4.5

Try not to become discouraged if you do not understand everything in Chapter 1. Finish reading the rest of the assigned chapters and then come back to Chapter 1 and read it again (and again if necessary). This chapter will be discussed in detail in the seminar later on.

Before finishing your work on Chapter 1, read Section 9 ("In War the Result is Never Final," p. 80) one more time. What is the importance of this statement? How does this fact influence the need to consider the question of war termination throughout the war? What does it suggest about the correct relationship between the political and military authorities?

Finally it must be suggested that although Clausewitz clearly states that the political authorities, the government must always direct and control the war effort he does not discuss and is not interested in the moral positions of the government or whether its aims in war are moral or immoral just or unjust. In other words this is not a problem that the soldier should concern himself with. In this sense, much like Machiavelli's work—Clausewitz's position is not moral or immoral but amoral—i.e. objective, neutral, detached.

Once you leave Chapter 1, you are on the open road. The rest of the chapters in the book are much easier!

Chapter 2 of Book 1 (pp. 90–99) is devoted to a number of important issues, the first of which is the problem of war termination. According to Clausewitz, wars are brought to an end for three possible reasons: (1) the inability to carry on the struggle (i.e. defeat); (2) the improbability of victory; and (3) unacceptable cost. Here he introduces what I call *the rational calculus of war* termination: "Since war is not an act of senseless passion but is controlled by its political object, the value of this object must determine the sacrifices to be made for it in **magnitude** and also in **duration.** Once the expenditure of effort exceeds the value of the political object, the object must be renounced and peace must follow" (p. 92).

Perhaps Clausewitz's most direct recommendation that war should be waged as rationally as possible appears in Chapter 2 of Book 8: "No one starts a war—or rather, no one in his senses ought to do so—without first being clear in his mind what he intends to achieve by that war and how he intends to conduct it." (*On War*, p. 579) (In Thucydides

CLAUSEWITZ'S "RATIONAL CALCULUS" OF WAR

COSTS

QUIT THE
WAR

COSTS AND BENEFITS ARE EQUAL

WAR CAN BE PURSUED
"PROFITABLY"

BENEFITS

"ONCE THE EXPENDITURE OF EFFORTS EXCEEDS
THE VALUE OF THE POLITICAL OBJECTIVE, THE
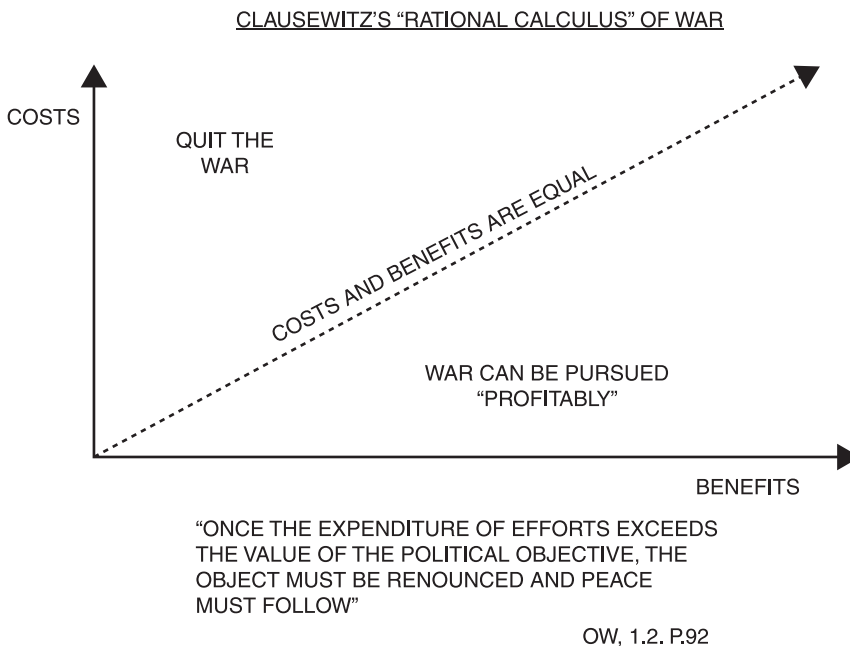OBJECT MUST BE RENOUNCED AND PEACE
MUST FOLLOW"

OW, 1.2. P.92

Figure 4.6

"*The History of the Peloponnesian War*", the Athenian envoys make a similar comment to the Spartans: "It is a common mistake in going to war to begin at the wrong end and wait for disaster to discuss the matter", Book 1, Section 78, p. 44. Machiavelli puts it in this way "Everyone may begin a war at his pleasure, but cannot so finish it. A prince, therefore, before engaging in any enterprise should well measure his strength and govern himself accordingly; and he must be very careful not to decieve himself in the estimate of his strength . . ." Machiavelli "*The Discourses*", Book 2, Chapter 10.)

   Again, we must note that Clausewitz, more than any of the classical theorists of war, emphasizes the critically important role of non-rational factors in war. (In fact, part of any rational conduct of war is to recognize and take systematically into account the role of non-rational and irrational factors in waging war.) As we have seen in the preceding discussion, he is fully cognizant of the *limits* of rational analysis and conduct in war. The roles of friction, chance, luck, uncertainty, reciprocal interaction, action under pressure, passion and hatred, creative leadership and intuition, and the characters and pathologies of different leaders always undermine the prospect of waging war as a "purely rational activity." Clausewitz analyzes these and many other factors that undermine the course of action envisioned by rational decision making in his discussion of "moral factors." (See in particular, Book 1, Chapter 1, Section 5; Book 1, Chapter 3; Book 2, Chapter 2, pp. 136–140; Book 3, Chapter 3, 4 and 14; and Book 8, Chapters 1 and 2.) A few quotations will elucidate Clausewitz's position on the impossibility of conducting war as a "purely rational activity":

> . . . Moral elements are among the most important in war. . . . Unfortunately they will not yield to academic wisdom. They cannot be classified or counted. They have to be seen or felt. . . . Even the most uninspired theories have to stray into the area of intangibles. For instance, one cannot explain the effects of a victory without taking psychological reactions into account. Hence, most of the matters dealt with in this book are *composed in equal parts of physical and of moral causes and effects.*
>
> (*OW*, pp. 184–185)

> Military activity is never directed against material force alone; it is always aimed simultaneously at the moral forces which give it life, and the two cannot be separated. But moral values can only be perceived by the inner [i.e., intuition].
>
> (*OW*, p. 137)

> Logic comes to a stop in this labyrinth [i.e., war].
>
> (*OW*, p. 579)

Note that while such rational calculations make sense in theory—they are very different to implement in reality. Why is this invariably the case? Clausewitz's emphasis on the need to wage war as rationally as possible must be viewed as a **normative recommendation**—not as a description of reality. As we have seen in the above discussion, he is fully aware of the limits of rational analysis in war. He knows that the hatreds, passions, emotions, and costs incurred in the process of waging war may at times render a rational decision making process extremely difficult if not impossible.

The discussion of the rational calculus of war termination is immediately followed by an "equilibrium analysis" considering the motivation of each of the belligerents to initiate negotiations for war termination (p. 92).

The final pages of Chapter 2 (pp. 96–97) begin by introducing the **principle of destruction** which suggests that all other things being equal "The destruction of the enemy forces is always the superior, more effective means, with which others cannot compete." It must, however, be made clear that *the destruction of the enemy forces is not necessarily physical but can be moral or psychological.* "When we speak of destroying the enemy's forces we must emphasize that nothing obliges us to limit this idea to physical forces: the moral element must also be considered" (p. 92). Furthermore even the **actual** destruction of the enemy's forces is not always required. "Combats' . . . aim is to destroy the enemy's forces as a means to a further end. That holds true even if no actual fighting occurs, because the outcome rests on the assumption that if it came to fighting the enemy would be destroyed" (p. 97, also, p. 181). These statements are very much in agreement with Sun Tzu's approach to the art of war. Yet the final pages of the chapter (pp. 97–99) include a truly outstanding argument (which so far has received very little attention!) against Sun Tzu's idea that the best way to win a war is without fighting. That which is the ideal achievement and epitome of success in war for Sun Tzu—is an exception for Clausewitz. (See Michael Handel, *Masters of War*, Chapter 9). (On the destruction of the enemy forces, see also Chapters 3, 4 and 11 of Book 4.)

Chapter 3 of Book 1 is one of the longest in the book. Since war is not a science, but an art, and therefore requires innate talent and genius, Clausewitz now discusses the

THE RELATIVE STRENGTH OF THE BELLIGERENTS
AND THEIR INCENTIVE TO MAKE PEACE
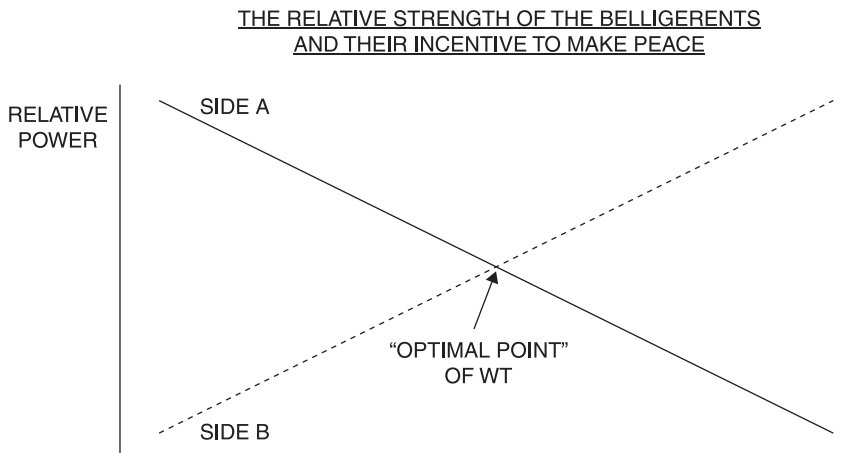
...THE DESIRE FOR PEACE WILL RISE AND FALL WITH THE PROBABLITY OF FURTHER SUCCESSES...IF SUCH INCENTIVES WERE OF EQUAL STRENGTH ON BOTH SIDES, THE TWO WOULD RESOLVE THEIR POLITICAL DISPUTES BY MEETING HALF WAY. IF THE INCENTIVE GROWS ON ONE SIDE, IT SHOULD DIMINISH ON THE OTHER..."

OW, 1.2. P.92

Figure 4.7

necessary characteristics of the military genius (the military commander as an artist, if you wish). Note however that most of the qualities he considers are those required for battle **on the operational not the strategic level** (but see his comments on the need to understand strategy and policy on p. 111).

The qualities that Clausewitz admires in the military genius are above all self-confidence, trust in his experience and **intuition** (his **coup d'oeil**), the ability even in the heat of battle to stick confidently to his original goal (the **"imperative principle,"** p. 108). While he must "stand like a rock" (p. 117) amidst the turmoil of battle, his maintenance of aim should not deteriorate into obstinacy. Above all, Clausewitz identifies great military leadership with the readiness to take risks. (See also Chapter 6 of Book 3).

The remaining chapters in Book 1 are important but require no particular explanation.

Book 3: On Strategy in General

When Clausewitz talks about strategy, he is actually discussing what we would now consider to be the operational level. (See Chapter 1 of Book 3 for his definition of strategy.) Note that the first section on p. 181 on possible engagements brings him closer to some of Sun Tzu's arguments.

Chapters 3, 4 and 8 of Book 3 address the role of moral factors in war. (Compare them with Book 2, Chapter 2, pp. 136–137.) (On the importance of "*Moral Factors*" in war, see also Book 2 Chapter 2, pp. 136–138.)

Chapter 8 of Book 3 discusses the importance of numerical superiority and should be read together with Chapter 3 of Book 5, pp. 282–284.

Chapters 9 and 10 of Book 3 are on surprise and deception. This is where Clausewitz differs the most from Sun Tzu. (See Handel, *Masters of War*, Chapter 11.)

Chapter 11 of Book 3 on "the concentration of forces in space" is short but notable as one of the few general "principles of war" offered by Clausewitz. (See also Book 3 Chapter 8.)

Chapter 16 of Book 3, "The Suspension of Action in War," should be compared and read together with Sections 14, 16, and 17 of Book 1, Chapter 1.

Chapter 17 of Book 3 is important as a reference to the new character of war in Clausewitz's own time which influenced his theory of war. (See also Chapter 16, pp. 218–219.)

Book 4: The Engagement

Chapters 2 and 4 of Book 4 are also dedicated to the study of the new character of war as established by the wars of the French Revolution. The chapters discussing the nature of modern war therefore provide the general background/context for his observations on war. Chapters 4 and 11 also provide ideas for a possible comparison with Sun Tzu.

The greatly increased intensity of warfare since the wars of the French Revolution and Napoleon brought war in reality much closer to Clausewitz's description of war in theory

(the absolute war). (See also, Book 8, Chapter 2, p. 580). Chapters 3 and 4 of Book 4 discuss the definition of victory and the need under most circumstances to destroy the enemy's forces in order to achieve victory. In Chapter 4, Clausewitz discusses the connection between physical and moral factors in victory (or defeat). Chapter 11 of Book 4 must be read with Sun Tzu in mind. Here Clausewitz argues that winning without fighting is "nonsense." Is he right? Was he right for his own time? How does this relate to some of his other statements? Is he consistent?

Book 5: Military Forces

Book 5, on military forces, is of much less interest to the strategist as it is primarily concerned with tactical and operational questions. But read Chapter 3 on relative strength. Compare it with Chapter 8 of Book 3.

Book 6: Defense

In Book 6, read Chapter 1 for a general statement on the nature of the defense. Read Chapter 5 and Chapter 23 entitled, "The Key to the Country," and compare them with the discussion in Chapter 27, on the concept of the *center of gravity*. (Chapter 27 is entitled "Defense of a Theater of War.") The same question is also discussed in Chapter 4 of Book 8. (See also Handel, *Masters of War*, Chapter 5). Read also Chapter 25 "Retreat to the Interior of the Country" which is based on Clausewitz's observation of Napoleon's invasion of Russia and discusses the concept of the culminating point of the attack as related to the offensive and defense. Perhaps the most critical, and certainly one of the most interesting chapters in Book 6 is Chapter 26, "The People in Arms," which is an excellent summary of the unique character of guerrilla warfare. Most of the insights and principles of guerrilla warfare (people's war) later developed at great length by Mao Tse Tung, can be found in essence in Chapter 26 of Book 6 a century before. (Chapter 25 also merits a careful comparison with Mao Tse-Tung's work. See *Selected Military Writings of Mao Tse-Tung*, pp. 109–121)

Book 7: The Attack

Book 7 is dedicated to the attack. Begin by reading Chapter 2 which, among other issues, discusses the concept of the **culminating point of the attack** (namely, that every offensive ultimately exhausts itself and cannot go on indefinitely). The attacker must know when to move over to the defense and consolidate his gains while he has the advantage. This theme also dominates Chapters 3, 4, 5, and 22.

While this concept is of great interest analytically, it does not provide the strategist or field commander with any concrete advice. Like most of the other concepts Clausewitz develops, it makes the reader think and ask further questions, but does **not** give him any "practical" answers. Consider the concept of the center of gravity in the same way. How useful is such a "mechanical" concept? What is the value of this concept? (For a detailed discussion see Chapter 11 of the second revised edition of Handel's *Masters of War*.)

Book 8: War Plans

In Book 8, Clausewitz returns once again to his discussion of the highest political and strategic levels of war (and to many of the concepts introduced in Chapter 1). Above all, pay attention throughout Book 8 to the tension between the desire to wage war as rationally as possible—to see war as a carefully calculated affair—and the need to consider the limits on rational calculations. Also note the tension between the inherent trends in war toward the extreme (toward the absolute war) and the moderating influence of rational political calculations on limiting war. Chapter 3B includes an interesting discussion of the evolution of war in historical perspective in different societies (see pp. 586–594). The most important statement on the political nature and the political control of war is to be found in Chapter 6B, "War as an Instrument of Policy." This is perhaps the most crucial chapter in the book. Read the rest of Book 8. Chapter 6 of Book 8 includes an elegant definition of policy: "It can be taken as agreed that the aim of policy is to unify and reconcile all aspects of internal administration as well as of spiritual values, and whatever else the moral philosopher may care to add. Policy, of course, is nothing in itself; it is simply the trustee for all these interests against other states. That it can err, subserve the ambition, private interests, and vanity of those in power, is neither here nor there. In no sense can the art of war ever be regarded as the preceptor of policy, and here we can only treat policy as representative of all interests of the community (pp. 606–607).

When Clausewitz started his work on *On War* he saw the absolute war with its tendency to escalate and search for definite clear-cut results as the only possible way to wage war. At a later stage (1827) he came to recognize that not all wars are or will be waged in that way, and that the political nature of war introduces a moderating influence that makes limited wars not only possible but likely. After recognizing this "*dual nature of war*," he decided to write Book 8 and rewrite the entire book (we know for certain that he rewrote Chapter 1 of Book 1 and possibly Chapter 2 of Book 1). Chapters 5, 7 and 8 of Book 8 are dedicated to an important discussion of the nature and goals of *limited wars*. In this context read also the first three paragraphs of the two notes left by Clausewitz describing his intention to revise his arguments in *On War* by taking into account his latest distinction between wars of limited aim and the total defeat of the enemy (p. 69).

According to Clausewitz, wars are limited primarily as a result of two considerations: the *first* is insufficient or limited resources; the second, and more important for his theory of limited war, is the set of limitations that the political leadership imposes on the wartime objectives as defined by the national interests. In Chapter 6 of Book 8, Clausewitz discusses the subject of *limited interventions* (or expeditionary forces) which is of particular interest to naval strategists. (This concept and related issues of limited war are further developed by Sir Julian Corbett in *Some Principles of Maritime Strategy* (Annapolis, Maryland: Naval Institute Press, 1988), in particular Chapters 3, 4, 5 and 6, pp. 41–87.)

If we ignore this transformation of Clausewitz's ideas and read *On War* as it **now** stands, it is clear that he fully recognized the dual nature of war in Book 1 as well as Book 8 and also Book 7, chapter 16.

* * * * *

Recently, some critics have pronounced Clausewitz's *On War* irrelevant for premodern and modern warfare. But while *On War* should be read critically and while it does contain some dimensions that are obsolete—most of his ideas, analytical concepts, and discussions on war are valid and useful. Friction, chance, uncertainty, or moral factors will always influence war and conflict; the "Trinitarian analysis" is relevant for all types of war in every era; and his emphasis on the *political* nature of war is critical as both a *factual* and *normative* statement.
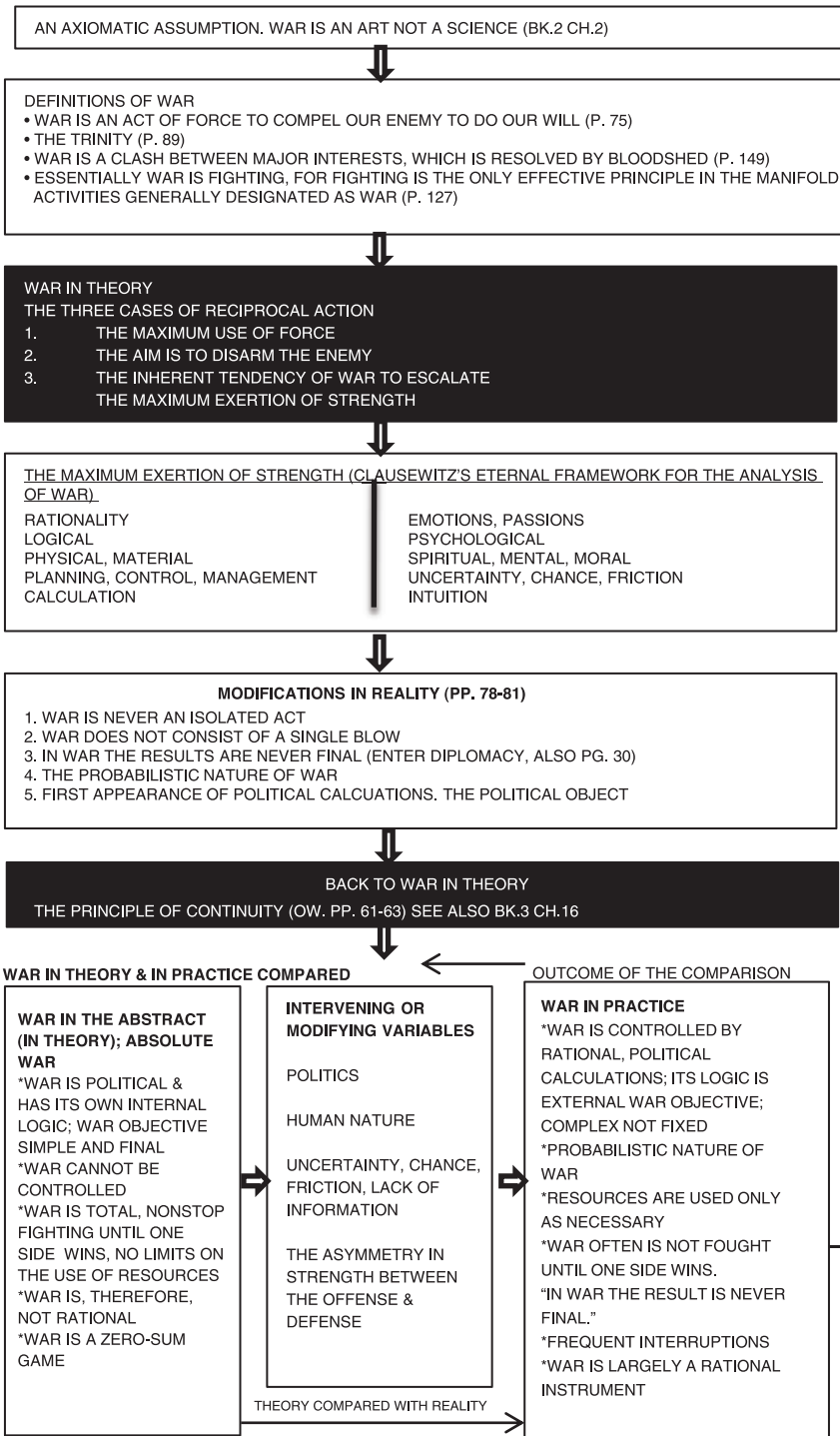
Clausewitz warns the reader "war is no pastime . . . it is a serious means to a serious end . . . (*On War*, Book 1, Section 23, p. 86). In *The Transformation of War* by Martin Van Creveld, one encounters a curious statement discounting the political nature of war; namely, "war is the continuation of sport by other means." Such assertions cannot be taken seriously anywhere—and certainly not in a democracy.

Clausewitz's *On War* is a challenge to all professional military officers, military experts, and strategists. Once you have "deciphered" Chapter 1 of Book 1, it is much easier going. Like all challenges, this one requires a considerable effort but in the end is well worth the investment. Although considered a "theoretical" work, *On War* is in fact of immense practical value for policy makers, strategists and military commanders at the higher operational level. Although it does not give the reader concrete, manual-like answers, it offers him insights that no other book can match into the problems of waging war on all levels.

The following works can help the reader to deepen his understanding of *On War:*

Michael I. Handel, (ed.), *Clausewitz and Modern Strategy* (London: Cass, 1989). The introduction, pp. 1–10 and Michael I. Handel, *Masters of War*, Second Revised and expanded edition (London: Cass, 1996). (A third revised and expanded edition is in preparation).

Interested students will benefit greatly from reading Mao Tse-Tung's "Problems of Strategy in China's Revolutionary War" and "On Protracted War" in *Selected Military Writings of Mao Tse-Tung* (Peking: Foreign Languages Press 1967). His essays are more "Clausewitzian" than "Sun Tzuian" and amplify many of Clausewitz's thoughts. For the influence of Clausewitz's *On War* or Corbett and his expansion of Clausewitz's theory of limited war see: Julian Corbett *Some Principles of Maritime Strategy* (Annapolis, MD: Naval Institute Press 1988).
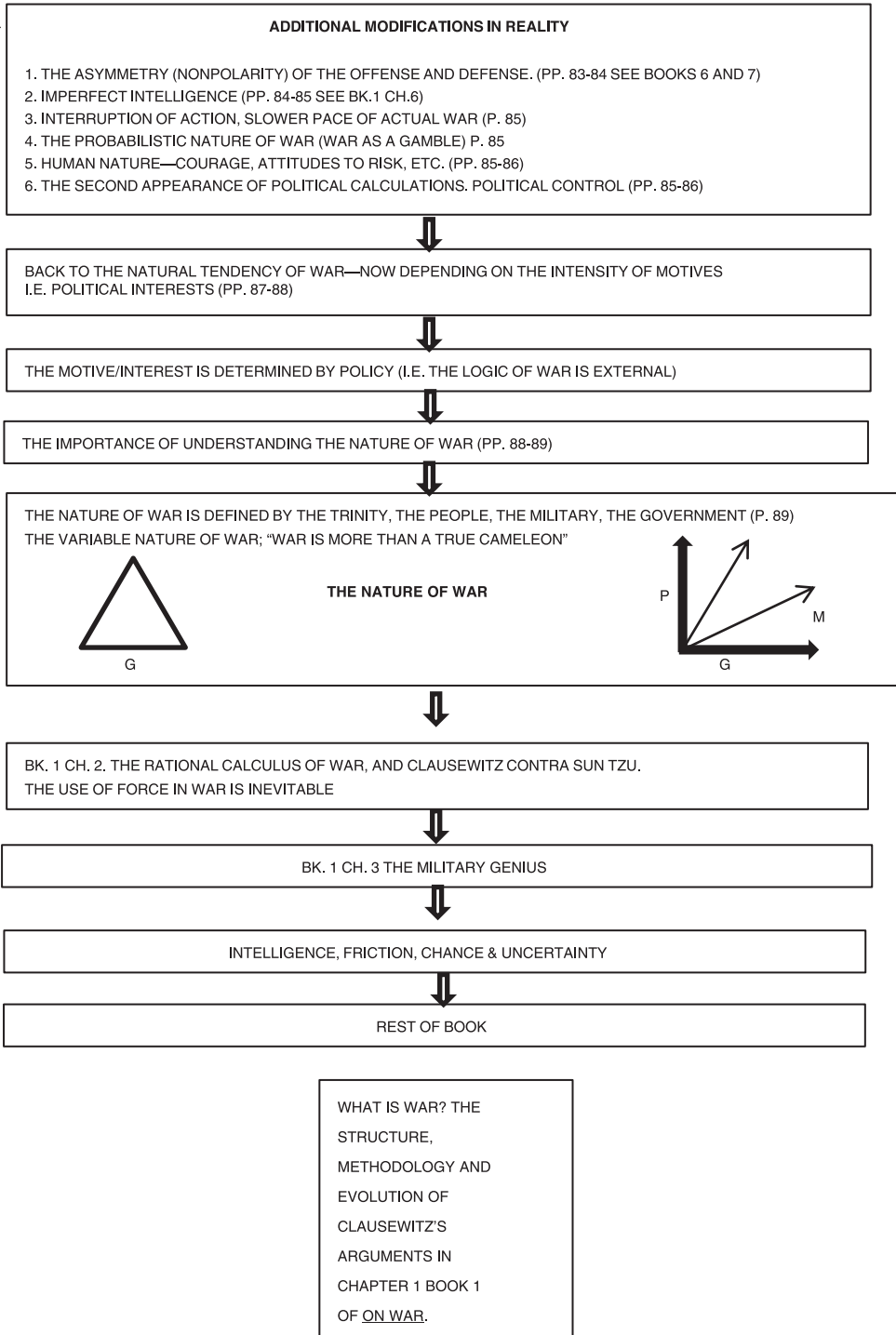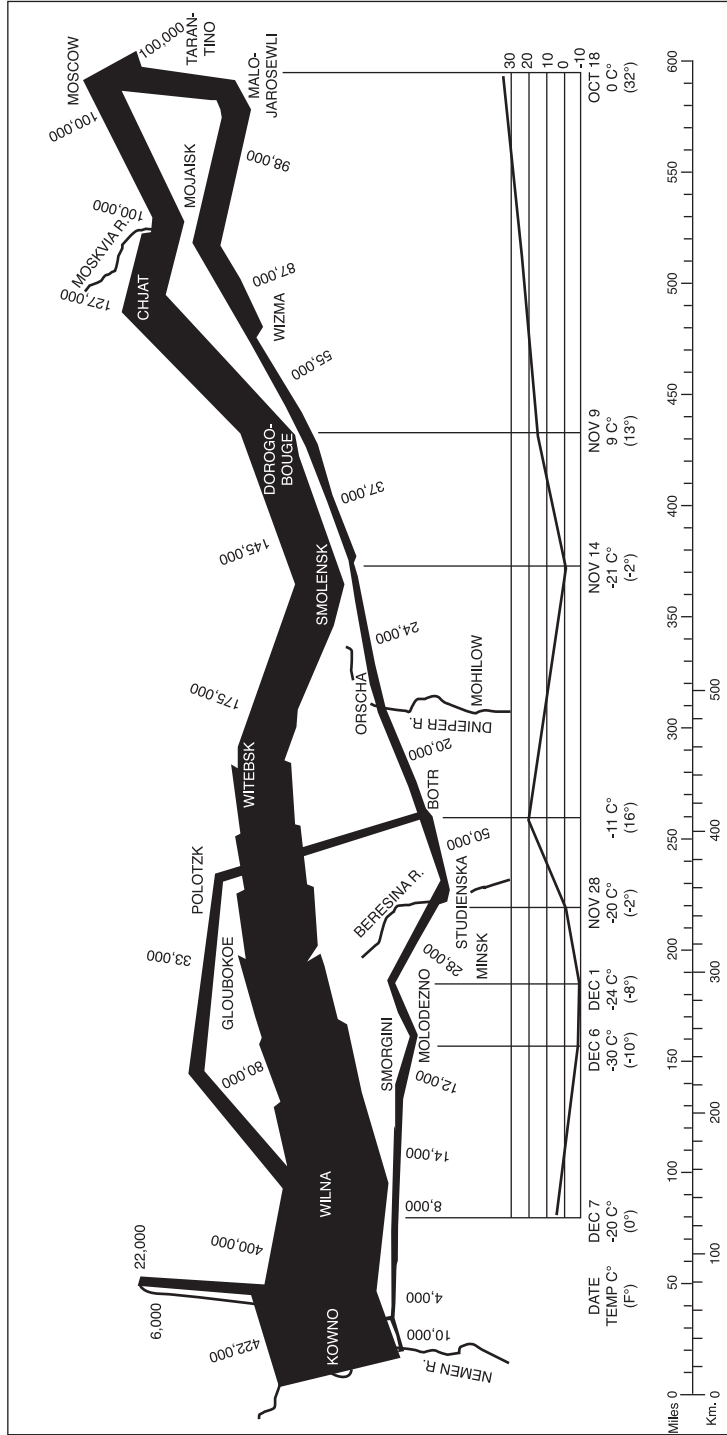
AN AXIOMATIC ASSUMPTION. WAR IS AN ART NOT A SCIENCE (BK.2 CH.2)

DEFINITIONS OF WAR
• WAR IS AN ACT OF FORCE TO COMPEL OUR ENEMY TO DO OUR WILL (P. 75)
• THE TRINITY (P. 89)
• WAR IS A CLASH BETWEEN MAJOR INTERESTS, WHICH IS RESOLVED BY BLOODSHED (P. 149)
• ESSENTIALLY WAR IS FIGHTING, FOR FIGHTING IS THE ONLY EFFECTIVE PRINCIPLE IN THE MANIFOLD
  ACTIVITIES GENERALLY DESIGNATED AS WAR (P. 127)

WAR IN THEORY
THE THREE CASES OF RECIPROCAL ACTION
1.   THE MAXIMUM USE OF FORCE
2.   THE AIM IS TO DISARM THE ENEMY
3.   THE INHERENT TENDENCY OF WAR TO ESCALATE
          THE MAXIMUM EXERTION OF STRENGTH

THE MAXIMUM EXERTION OF STRENGTH (CLAUSEWITZ'S ETERNAL FRAMEWORK FOR THE ANALYSIS
OF WAR)

RATIONALITY	EMOTIONS, PASSIONS
LOGICAL	PSYCHOLOGICAL
PHYSICAL, MATERIAL	SPIRITUAL, MENTAL, MORAL
PLANNING, CONTROL, MANAGEMENT	UNCERTAINTY, CHANCE, FRICTION
CALCULATION	INTUITION

MODIFICATIONS IN REALITY (PP. 78-81)

1. WAR IS NEVER AN ISOLATED ACT
2. WAR DOES NOT CONSIST OF A SINGLE BLOW
3. IN WAR THE RESULTS ARE NEVER FINAL (ENTER DIPLOMACY, ALSO PG. 30)
4. THE PROBABILISTIC NATURE OF WAR
5. FIRST APPEARANCE OF POLITICAL CALCUATIONS. THE POLITICAL OBJECT

BACK TO WAR IN THEORY
THE PRINCIPLE OF CONTINUITY (OW. PP. 61-63) SEE ALSO BK.3 CH.16

WAR IN THEORY & IN PRACTICE COMPARED   OUTCOME OF THE COMPARISON

WAR IN THE ABSTRACT (IN THEORY); ABSOLUTE WAR	INTERVENING OR MODIFYING VARIABLES	WAR IN PRACTICE
*WAR IS POLITICAL & HAS ITS OWN INTERNAL LOGIC; WAR OBJECTIVE SIMPLE AND FINAL	POLITICS	*WAR IS CONTROLLED BY RATIONAL, POLITICAL CALCULATIONS; ITS LOGIC IS EXTERNAL WAR OBJECTIVE; COMPLEX NOT FIXED
*WAR CANNOT BE CONTROLLED	HUMAN NATURE	*PROBABILISTIC NATURE OF WAR
*WAR IS TOTAL, NONSTOP FIGHTING UNTIL ONE SIDE WINS, NO LIMITS ON THE USE OF RESOURCES	UNCERTAINTY, CHANCE, FRICTION, LACK OF INFORMATION	*RESOURCES ARE USED ONLY AS NECESSARY
*WAR IS, THEREFORE, NOT RATIONAL		*WAR OFTEN IS NOT FOUGHT UNTIL ONE SIDE WINS. "IN WAR THE RESULT IS NEVER FINAL."
*WAR IS A ZERO-SUM GAME	THE ASYMMETRY IN STRENGTH BETWEEN THE OFFENSE & DEFENSE	*FREQUENT INTERRUPTIONS
		*WAR IS LARGELY A RATIONAL INSTRUMENT

THEORY COMPARED WITH REALITY

ADDITIONAL MODIFICATIONS IN REALITY

1. THE ASYMMETRY (NONPOLARITY) OF THE OFFENSE AND DEFENSE. (PP. 83-84 SEE BOOKS 6 AND 7)
2. IMPERFECT INTELLIGENCE (PP. 84-85 SEE BK.1 CH.6)
3. INTERRUPTION OF ACTION, SLOWER PACE OF ACTUAL WAR (P. 85)
4. THE PROBABILISTIC NATURE OF WAR (WAR AS A GAMBLE) P. 85
5. HUMAN NATURE—COURAGE, ATTITUDES TO RISK, ETC. (PP. 85-86)
6. THE SECOND APPEARANCE OF POLITICAL CALCULATIONS. POLITICAL CONTROL (PP. 85-86)

⇩

BACK TO THE NATURAL TENDENCY OF WAR—NOW DEPENDING ON THE INTENSITY OF MOTIVES
I.E. POLITICAL INTERESTS (PP. 87-88)

⇩

THE MOTIVE/INTEREST IS DETERMINED BY POLICY (I.E. THE LOGIC OF WAR IS EXTERNAL)

⇩

THE IMPORTANCE OF UNDERSTANDING THE NATURE OF WAR (PP. 88-89)

⇩

THE NATURE OF WAR IS DEFINED BY THE TRINITY, THE PEOPLE, THE MILITARY, THE GOVERNMENT (P. 89)
THE VARIABLE NATURE OF WAR; "WAR IS MORE THAN A TRUE CAMELEON"

THE NATURE OF WAR

⇩

BK. 1 CH. 2. THE RATIONAL CALCULUS OF WAR, AND CLAUSEWITZ CONTRA SUN TZU.
THE USE OF FORCE IN WAR IS INEVITABLE

⇩

BK. 1 CH. 3 THE MILITARY GENIUS

⇩

INTELLIGENCE, FRICTION, CHANCE & UNCERTAINTY

⇩

REST OF BOOK

WHAT IS WAR? THE STRUCTURE, METHODOLOGY AND EVOLUTION OF CLAUSEWITZ'S ARGUMENTS IN CHAPTER 1 BOOK 1 OF <u>ON WAR</u>.

Figure 4.8

NAPOLEON'S RUSSIAN CAMPAIGN (1812)

MOSCOW
100,000
100,000
TARAN-TINO
MALO-JAROSEWLI
MOJAISK
98,000
MOSKVIA R.
100,000
87,000
WIZMA
127,000
CHJAT
55,000
DOROGO-BOUGE
37,000
SMOLENSK
145,000
24,000
175,000
WITEBSK
ORSCHA
MOHILOW
DNIEPER R.
20,000
BOTR
POLOTZK
50,000
33,000
BERESINA R.
STUDIENSKA
GLOUBOKOE
MINSK
28,000
80,000
SMORGINI
MOLODEZNO
12,000
WILNA
14,000
8,000
22,000
400,000
KOWNO
4,000
6,000
422,000
10,000
NEMEN R.

DATE
TEMP C°
(F°)

DEC 7
-20 C°
(0°)

DEC 6
-30 C°
(-10°)

DEC 1
-24 C°
(-8°)

NOV 28
-20 C°
(-2°)

-11 C°
(16°)

NOV 14
-21 C°
(-2°)

NOV 9
9 C°
(13°)

OCT 18
0 C°
(32°)

30
20
10
0
-10

Miles 0   50   100   150   200
Km. 0   100   200   300   400   500   600

Clauswitz's culminating point of victory/attack

The French engineer Charles Joseph Minard (1781–1870) drew this combination data map and time series (1861) to describe Napoleon's invasion of and retreat from Russia in 1812. This map diagram exemplifies Clausewitz's argument that the defense is inherently stronger than the offense. The offense paradoxically grows weaker as it succeeds. What he called the culminating point of victory and the culminating point of attack must be considered. Clausewitz argues that ". . . There is no growth of intensity in an attack comparable to that of the various types of defense." He speaks of the gradually "diminishing force of the attack," which is not surprising since he perceives that "It is easier to hold ground than to take it" and adds that ". . . Time which if allowed to pass unused accumulates to the credit of the defender. He reaps what he did not sow." ". . . The defender is better placed to spring surprises by the strength and direction of his own attacks." The attacker, on the other hand, suffers from many disadvantages. As it advances "The attacking army cuts itself from its own theater of operations, and suffers by having to leave its fortresses and depots behind. The larger the area of operations that it must traverse, the more it is weakened by the effect of marches and by the detachment of garrisons." In addition, "The danger threatening the defender will bring allies to his aid . . . [And] the defender, being in real danger, makes the greater effort, whereas, the efforts of the victor slacken off. The longer these flanks become [as] the attacker advances, the more . . .

the risks that they represent will progressively increase. Not only are they hard to cover, but the very length of the unprotected lines of communication tends to challenge the enemy's spirit of enterprise; and the consequences their loss can have in the event of a retreat are very grave indeed. Since all of this places new burdens on an advancing army with every step it takes, such an army – unless it started out with exceptional superiority – will be crippled by its dwindling freedom of action and progressively reduced offensive power." There are very few "strategic attacks that have led to peace . . . Most of them lead up to the point where the remaining strength is just enough to maintain a defense and wait for peace. Beyond that point the scale turns and the reaction [of the defense] follows with a force that is usually much stronger than that of the original attack. This is what we mean by the culminating point of attack." Given the fact that the transition to the defense in the midst of an attack deep inside the enemy's territory leads to a much weaker form of defense, "What matters, therefore, is to detect the culminating point with discriminative judgement." No doubt Clausewitz formulated many of these perceptive observations while witnessing and later studying Napoleon's disastrous invasion of Russia. Because Napoleon marched beyond the culminating point of the attack without being able to dictate peace terms, his invading army of 422,000 numbered only 10,000 by the time it returned to Poland.

Figure 4.9

5 The art of war

Sun Tzu, translated by Lionel Giles

I. Laying plans

1. Sun Tzu said: The art of war is of vital importance to the State.

2. It is a matter of life and death, a road either to safety or to ruin. Hence it is a subject of inquiry which can on no account be neglected.

3. The art of war, then, is governed by five constant factors, to be taken into account in one's deliberations, when seeking to determine the conditions obtaining in the field.

4. These are: (1) The Moral Law; (2) Heaven; (3) Earth; (4) The Commander; (5) Method and discipline.

5, 6. The Moral Law causes the people to be in complete accord with their ruler, so that they will follow him regardless of their lives, undismayed by any danger.

7. Heaven signifies night and day, cold and heat, times and seasons.

8. Earth comprises distances, great and small; danger and security; open ground and narrow passes; the chances of life and death.

9. The Commander stands for the virtues of wisdom, sincerity, benevolence, courage and strictness.

10. By method and discipline are to be understood the marshaling of the army in its proper subdivisions, the graduations of rank among the officers, the maintenance of roads by which supplies may reach the army, and the control of military expenditure.

11. These five heads should be familiar to every general: he who knows them will be victorious; he who knows them not will fail.

12. Therefore, in your deliberations, when seeking to determine the military conditions, let them be made the basis of a comparison, in this wise:–

13. (1) Which of the two sovereigns is imbued with the Moral law?

    (2) Which of the two generals has most ability?

    (3) With whom lie the advantages derived from Heaven and Earth?

(4)   On which side is discipline most rigorously enforced?

(5)   Which army is stronger?

(6)   On which side are officers and men more highly trained?

(7)   In which army is there the greater constancy both in reward and punishment?

14. By means of these seven considerations I can forecast victory or defeat.

15. The general that hearkens to my counsel and acts upon it, will conquer: let such a one be retained in command! The general that hearkens not to my counsel nor acts upon it, will suffer defeat:– let such a one be dismissed!

16. While heeding the profit of my counsel, avail yourself also of any helpful circumstances over and beyond the ordinary rules.

17. According as circumstances are favorable, one should modify one's plans.

18. All warfare is based on deception.

19. Hence, when able to attack, we must seem unable; when using our forces, we must seem inactive; when we are near, we must make the enemy believe we are far away; when far away, we must make him believe we are near.

20. Hold out baits to entice the enemy. Feign disorder, and crush him.

21. If he is secure at all points, be prepared for him. If he is in superior strength, evade him.

22. If your opponent is of choleric temper, seek to irritate him. Pretend to be weak, that he may grow arrogant.

23. If he is taking his ease, give him no rest. If his forces are united, separate them.

24. Attack him where he is unprepared, appear where you are not expected.

25. These military devices, leading to victory, must not be divulged beforehand.

26. Now the general who wins a battle makes many calculations in his temple ere the battle is fought. The general who loses a battle makes but few calculations beforehand. Thus do many calculations lead to victory, and few calculations to defeat: how much more no calculation at all! It is by attention to this point that I can foresee who is likely to win or lose.

II. Waging war

1. Sun Tzu said: In the operations of war, where there are in the field a thousand swift chariots, as many heavy chariots, and a hundred thousand mail-clad soldiers, with provisions enough to carry them a thousand li, the expenditure at home and at the front, including entertainment of guests, small items such as glue and paint, and sums spent on chariots and armor, will reach the total of a thousand ounces of silver per day. Such is the cost of raising an army of 100,000 men.

2. When you engage in actual fighting, if victory is long in coming, then men's weapons will grow dull and their ardor will be damped. If you lay siege to a town, you will exhaust your strength.

3. Again, if the campaign is protracted, the resources of the State will not be equal to the strain.

4. Now, when your weapons are dulled, your ardor damped, your strength exhausted and your treasure spent, other chieftains will spring up to take advantage of your extremity. Then no man, however wise, will be able to avert the consequences that must ensue.

5. Thus, though we have heard of stupid haste in war, cleverness has never been seen associated with long delays.

6. There is no instance of a country having benefited from prolonged warfare.

7. It is only one who is thoroughly acquainted with the evils of war that can thoroughly understand the profitable way of carrying it on.

8. The skillful soldier does not raise a second levy, neither are his supply-wagons loaded more than twice.

9. Bring war material with you from home, but forage on the enemy. Thus the army will have food enough for its needs.

10. Poverty of the State exchequer causes an army to be maintained by contributions from a distance. Contributing to maintain an army at a distance causes the people to be impoverished.

11. On the other hand, the proximity of an army causes prices to go up; and high prices cause the people's substance to be drained away.

12. When their substance is drained away, the peasantry will be afflicted by heavy exactions.

13, 14. With this loss of substance and exhaustion of strength, the homes of the people will be stripped bare, and three-tenths of their income will be dissipated; while government expenses for broken chariots, worn-out horses, breast-plates and helmets, bows and arrows, spears and shields, protective mantles, draught-oxen and heavy wagons, will amount to four-tenths of its total revenue.

15. Hence a wise general makes a point of foraging on the enemy. One cartload of the enemy's provisions is equivalent to twenty of one's own, and likewise a single picul of his provender is equivalent to twenty from one's own store.

16. Now in order to kill the enemy, our men must be roused to anger; that there may be advantage from defeating the enemy, they must have their rewards.

17. Therefore in chariot fighting, when ten or more chariots have been taken, those should be rewarded who took the first. Our own flags should be substituted for those of the enemy, and the chariots mingled and used in conjunction with ours. The captured soldiers should be kindly treated and kept.

18. This is called, using the conquered foe to augment one's own strength.

19. In war, then, let your great object be victory, not lengthy campaigns.

20. Thus it may be known that the leader of armies is the arbiter of the people's fate, the man on whom it depends whether the nation shall be in peace or in peril.

III. Attack by stratagem

1. Sun Tzu said: In the practical art of war, the best thing of all is to take the enemy's country whole and intact; to shatter and destroy it is not so good. So, too, it is better to recapture an army entire than to destroy it, to capture a regiment, a detachment or a company entire than to destroy them.

2. Hence to fight and conquer in all your battles is not supreme excellence; supreme excellence consists in breaking the enemy's resistance without fighting.

3. Thus the highest form of generalship is to balk the enemy's plans; the next best is to prevent the junction of the enemy's forces; the next in order is to attack the enemy's army in the field; and the worst policy of all is to besiege walled cities.

4. The rule is, not to besiege walled cities if it can possibly be avoided. The preparation of mantlets, movable shelters, and various implements of war, will take up three whole months; and the piling up of mounds over against the walls will take three months more.

5. The general, unable to control his irritation, will launch his men to the assault like swarming ants, with the result that one-third of his men are slain, while the town still remains untaken. Such are the disastrous effects of a siege.

6. Therefore the skillful leader subdues the enemy's troops without any fighting; he captures their cities without laying siege to them; he overthrows their kingdom without lengthy operations in the field.

7. With his forces intact he will dispute the mastery of the Empire, and thus, without losing a man, his triumph will be complete. This is the method of attacking by stratagem.

8. It is the rule in war, if our forces are ten to the enemy's one, to surround him; if five to one, to attack him; if twice as numerous, to divide our army into two.

9. If equally matched, we can offer battle; if slightly inferior in numbers, we can avoid the enemy; if quite unequal in every way, we can flee from him.

10. Hence, though an obstinate fight may be made by a small force, in the end it must be captured by the larger force.

11. Now the general is the bulwark of the State; if the bulwark is complete at all points; the State will be strong; if the bulwark is defective, the State will be weak.

12. There are three ways in which a ruler can bring misfortune upon his army:–

13. (1) By commanding the army to advance or to retreat, being ignorant of the fact that it cannot obey. This is called hobbling the army.

14. (2) By attempting to govern an army in the same way as he administers a kingdom, being ignorant of the conditions which obtain in an army. This causes restlessness in the soldier's minds.

15. (3) By employing the officers of his army without discrimination, through ignorance of the military principle of adaptation to circumstances. This shakes the confidence of the soldiers.

16. But when the army is restless and distrustful, trouble is sure to come from the other feudal princes. This is simply bringing anarchy into the army, and flinging victory away.

17. Thus we may know that there are five essentials for victory:

   (1) He will win who knows when to fight and when not to fight.

   (2) He will win who knows how to handle both superior and inferior forces.

   (3) He will win whose army is animated by the same spirit throughout all its ranks.

   (4) He will win who, prepared himself, waits to take the enemy unprepared.

   (5) He will win who has military capacity and is not interfered with by the sovereign.

18. Hence the saying: If you know the enemy and know yourself, you need not fear the result of a hundred battles. If you know yourself but not the enemy, for every victory gained you will also suffer a defeat. If you know neither the enemy nor yourself, you will succumb in every battle.

IV. Tactical dispositions

1. Sun Tzu said: The good fighters of old first put themselves beyond the possibility of defeat, and then waited for an opportunity of defeating the enemy.

2. To secure ourselves against defeat lies in our own hands, but the opportunity of defeating the enemy is provided by the enemy himself.

3. Thus the good fighter is able to secure himself against defeat, but cannot make certain of defeating the enemy.

4. Hence the saying: One may know how to conquer without being able to do it.

5. Security against defeat implies defensive tactics; ability to defeat the enemy means taking the offensive.

6. Standing on the defensive indicates insufficient strength; attacking, a superabundance of strength.

7. The general who is skilled in defense hides in the most secret recesses of the earth; he who is skilled in attack flashes forth from the topmost heights of heaven. Thus on the one hand we have ability to protect ourselves; on the other, a victory that is complete.

8. To see victory only when it is within the ken of the common herd is not the acme of excellence.

9. Neither is it the acme of excellence if you fight and conquer and the whole Empire says, "Well done!"

10. To lift an autumn hair is no sign of great strength; to see the sun and moon is no sign of sharp sight; to hear the noise of thunder is no sign of a quick ear.

11. What the ancients called a clever fighter is one who not only wins, but excels in winning with ease.

12. Hence his victories bring him neither reputation for wisdom nor credit for courage.

13. He wins his battles by making no mistakes. Making no mistakes is what establishes the certainty of victory, for it means conquering an enemy that is already defeated.

14. Hence the skillful fighter puts himself into a position which makes defeat impossible, and does not miss the moment for defeating the enemy.

15. Thus it is that in war the victorious strategist only seeks battle after the victory has been won, whereas he who is destined to defeat first fights and afterwards looks for victory.

16. The consummate leader cultivates the moral law, and strictly adheres to method and discipline; thus it is in his power to control success.

17. In respect of military method, we have, firstly, Measurement; secondly, Estimation of quantity; thirdly, Calculation; fourthly, Balancing of chances; fifthly, Victory.

18. Measurement owes its existence to Earth; Estimation of quantity to Measurement; Calculation to Estimation of quantity; Balancing of chances to Calculation; and Victory to Balancing of chances.

19. A victorious army opposed to a routed one, is as a pound's weight placed in the scale against a single grain.

20. The onrush of a conquering force is like the bursting of pent-up waters into a chasm a thousand fathoms deep.

V. Energy

1. Sun Tzu said: The control of a large force is the same principle as the control of a few men: it is merely a question of dividing up their numbers.

2. Fighting with a large army under your command is nowise different from fighting with a small one: it is merely a question of instituting signs and signals.

3. To ensure that your whole host may withstand the brunt of the enemy's attack and remain unshaken – this is effected by maneuvers direct and indirect.

4. That the impact of your army may be like a grindstone dashed against an egg – this is effected by the science of weak points and strong.

5. In all fighting, the direct method may be used for joining battle, but indirect methods will be needed in order to secure victory.

6. Indirect tactics, efficiently applied, are inexhaustible as Heaven and Earth, unending as the flow of rivers and streams; like the sun and moon, they end but to begin anew; like the four seasons, they pass away to return once more.

7. There are not more than five musical notes, yet the combinations of these five give rise to more melodies than can ever be heard.

8. There are not more than five primary colors (blue, yellow, red, white, and black), yet in combination they produce more hues than can ever been seen.

9. There are not more than five cardinal tastes (sour, acrid, salt, sweet, bitter), yet combinations of them yield more flavors than can ever be tasted.

10. In battle, there are not more than two methods of attack – the direct and the indirect; yet these two in combination give rise to an endless series of maneuvers.

11. The direct and the indirect lead on to each other in turn. It is like moving in a circle – you never come to an end. Who can exhaust the possibilities of their combination?

12. The onset of troops is like the rush of a torrent which will even roll stones along in its course.

13. The quality of decision is like the well-timed swoop of a falcon which enables it to strike and destroy its victim.

14. Therefore the good fighter will be terrible in his onset, and prompt in his decision.

15. Energy may be likened to the bending of a crossbow; decision, to the releasing of a trigger.

16. Amid the turmoil and tumult of battle, there may be seeming disorder and yet no real disorder at all; amid confusion and chaos, your array may be without head or tail, yet it will be proof against defeat.

17. Simulated disorder postulates perfect discipline, simulated fear postulates courage; simulated weakness postulates strength.

18. Hiding order beneath the cloak of disorder is simply a question of subdivision; concealing courage under a show of timidity presupposes a fund of latent energy; masking strength with weakness is to be effected by tactical dispositions.

19. Thus one who is skillful at keeping the enemy on the move maintains deceitful appearances, according to which the enemy will act. He sacrifices something, that the enemy may snatch at it.

20. By holding out baits, he keeps him on the march; then with a body of picked men he lies in wait for him.

21. The clever combatant looks to the effect of combined energy, and does not require too much from individuals. Hence his ability to pick out the right men and utilize combined energy.

22. When he utilizes combined energy, his fighting men become as it were like unto rolling logs or stones. For it is the nature of a log or stone to remain motionless on level ground, and to move when on a slope; if four-cornered, to come to a standstill, but if round-shaped, to go rolling down.

23. Thus the energy developed by good fighting men is as the momentum of a round stone rolled down a mountain thousands of feet in height. So much on the subject of energy.

VI. Weak points and strong

1. Sun Tzu said: Whoever is first in the field and awaits the coming of the enemy, will be fresh for the fight; whoever is second in the field and has to hasten to battle will arrive exhausted.

2. Therefore the clever combatant imposes his will on the enemy, but does not allow the enemy's will to be imposed on him.

3. By holding out advantages to him, he can cause the enemy to approach of his own accord; or, by inflicting damage, he can make it impossible for the enemy to draw near.

4. If the enemy is taking his ease, he can harass him; if well supplied with food, he can starve him out; if quietly encamped, he can force him to move.

5. Appear at points which the enemy must hasten to defend; march swiftly to places where you are not expected.

6. An army may march great distances without distress, if it marches through country where the enemy is not.

7. You can be sure of succeeding in your attacks if you only attack places which are undefended. You can ensure the safety of your defense if you only hold positions that cannot be attacked.

8. Hence that general is skillful in attack whose opponent does not know what to defend; and he is skillful in defense whose opponent does not know what to attack.

9. O divine art of subtlety and secrecy! Through you we learn to be invisible, through you inaudible; and hence we can hold the enemy's fate in our hands.

10. You may advance and be absolutely irresistible, if you make for the enemy's weak points; you may retire and be safe from pursuit if your movements are more rapid than those of the enemy.

11. If we wish to fight, the enemy can be forced to an engagement even though he be sheltered behind a high rampart and a deep ditch. All we need do is attack some other place that he will be obliged to relieve.

12. If we do not wish to fight, we can prevent the enemy from engaging us even though the lines of our encampment be merely traced out on the ground. All we need do is to throw something odd and unaccountable in his way.

13. By discovering the enemy's dispositions and remaining invisible ourselves, we can keep our forces concentrated, while the enemy's must be divided.

14. We can form a single united body, while the enemy must split up into fractions. Hence there will be a whole pitted against separate parts of a whole, which means that we shall be many to the enemy's few.

15. And if we are able thus to attack an inferior force with a superior one, our opponents will be in dire straits.

16. The spot where we intend to fight must not be made known; for then the enemy will have to prepare against a possible attack at several different points; and his forces being thus distributed in many directions, the numbers we shall have to face at any given point will be proportionately few.

17. For should the enemy strengthen his van, he will weaken his rear; should he strengthen his rear, he will weaken his van; should he strengthen his left, he will weaken his right; should he strengthen his right, he will weaken his left. If he sends reinforcements everywhere, he will everywhere be weak.

18. Numerical weakness comes from having to prepare against possible attacks; numerical strength, from compelling our adversary to make these preparations against us.

19. Knowing the place and the time of the coming battle, we may concentrate from the greatest distances in order to fight.

20. But if neither time nor place be known, then the left wing will be impotent to succor the right, the right equally impotent to succor the left, the van unable to relieve the rear, or the rear to support the van. How much more so if the furthest portions of the army are anything under a hundred LI apart, and even the nearest are separated by several LI!

21. Though according to my estimate the soldiers of Yueh exceed our own in number, that shall advantage them nothing in the matter of victory. I say then that victory can be achieved.

22. Though the enemy be stronger in numbers, we may prevent him from fighting. Scheme so as to discover his plans and the likelihood of their success.

23. Rouse him, and learn the principle of his activity or inactivity. Force him to reveal himself, so as to find out his vulnerable spots.

24. Carefully compare the opposing army with your own, so that you may know where strength is superabundant and where it is deficient.

25. In making tactical dispositions, the highest pitch you can attain is to conceal them; conceal your dispositions, and you will be safe from the prying of the subtlest spies, from the machinations of the wisest brains.

26. How victory may be produced for them out of the enemy's own tactics – that is what the multitude cannot comprehend.

27. All men can see the tactics whereby I conquer, but what none can see is the strategy out of which victory is evolved.

28. Do not repeat the tactics which have gained you one victory, but let your methods be regulated by the infinite variety of circumstances.

29. Military tactics are like unto water; for water in its natural course runs away from high places and hastens downwards.

30. So in war, the way is to avoid what is strong and to strike at what is weak.

31. Water shapes its course according to the nature of the ground over which it flows; the soldier works out his victory in relation to the foe whom he is facing.

32. Therefore, just as water retains no constant shape, so in warfare there are no constant conditions.

33. He who can modify his tactics in relation to his opponent and thereby succeed in winning, may be called a heaven-born captain.

34. The five elements (water, fire, wood, metal, earth) are not always equally predominant; the four seasons make way for each other in turn. There are short days and long; the moon has its periods of waning and waxing.

VII. Maneuvering

1. Sun Tzu said: In war, the general receives his commands from the sovereign.

2. Having collected an army and concentrated his forces, he must blend and harmonize the different elements thereof before pitching his camp.

3. After that, comes tactical maneuvering, than which there is nothing more difficult. The difficulty of tactical maneuvering consists in turning the devious into the direct, and misfortune into gain.

4. Thus, to take a long and circuitous route, after enticing the enemy out of the way, and though starting after him, to contrive to reach the goal before him, shows knowledge of the artifice of deviation.

5. Maneuvering with an army is advantageous; with an undisciplined multitude, most dangerous.

6. If you set a fully equipped army in march in order to snatch an advantage, the chances are that you will be too late. On the other hand, to detach a flying column for the purpose involves the sacrifice of its baggage and stores.

7. Thus, if you order your men to roll up their buff-coats, and make forced marches without halting day or night, covering double the usual distance at a stretch, doing a

hundred LI in order to wrest an advantage, the leaders of all your three divisions will fall into the hands of the enemy.

8. The stronger men will be in front, the jaded ones will fall behind, and on this plan only one-tenth of your army will reach its destination.

9. If you march fifty LI in order to outmaneuver the enemy, you will lose the leader of your first division, and only half your force will reach the goal.

10. If you march thirty LI with the same object, two-thirds of your army will arrive.

11. We may take it then that an army without its baggage-train is lost; without provisions it is lost; without bases of supply it is lost.

12. We cannot enter into alliances until we are acquainted with the designs of our neighbors.

13. We are not fit to lead an army on the march unless we are familiar with the face of the country – its mountains and forests, its pitfalls and precipices, its marshes and swamps.

14. We shall be unable to turn natural advantage to account unless we make use of local guides.

15. In war, practice dissimulation, and you will succeed.

16. Whether to concentrate or to divide your troops, must be decided by circumstances.

17. Let your rapidity be that of the wind, your compactness that of the forest.

18. In raiding and plundering be like fire, in immovability like a mountain.

19. Let your plans be dark and impenetrable as night, and when you move, fall like a thunderbolt.

20. When you plunder a countryside, let the spoil be divided amongst your men; when you capture new territory, cut it up into allotments for the benefit of the soldiery.

21. Ponder and deliberate before you make a move.

22. He will conquer who has learnt the artifice of deviation. Such is the art of maneuvering.

23. The Book of Army Management says: On the field of battle, the spoken word does not carry far enough: hence the institution of gongs and drums. Nor can ordinary objects be seen clearly enough: hence the institution of banners and flags.

24. Gongs and drums, banners and flags, are means whereby the ears and eyes of the host may be focused on one particular point.

25. The host thus forming a single united body, is it impossible either for the brave to advance alone, or for the cowardly to retreat alone. This is the art of handling large masses of men.

26. In night-fighting, then, make much use of signal-fires and drums, and in fighting by day, of flags and banners, as a means of influencing the ears and eyes of your army.

27. A whole army may be robbed of its spirit; a commander-in-chief may be robbed of his presence of mind.

28. Now a soldier's spirit is keenest in the morning; by noonday it has begun to flag; and in the evening, his mind is bent only on returning to camp.

29. A clever general, therefore, avoids an army when its spirit is keen, but attacks it when it is sluggish and inclined to return. This is the art of studying moods.

30. Disciplined and calm, to await the appearance of disorder and hubbub amongst the enemy:– this is the art of retaining self-possession.

31. To be near the goal while the enemy is still far from it, to wait at ease while the enemy is toiling and struggling, to be well-fed while the enemy is famished:– this is the art of husbanding one's strength.

32. To refrain from intercepting an enemy whose banners are in perfect order, to refrain from attacking an army drawn up in calm and confident array:– this is the art of studying circumstances.

33. It is a military axiom not to advance uphill against the enemy, nor to oppose him when he comes downhill.

34. Do not pursue an enemy who simulates flight; do not attack soldiers whose temper is keen.

35. Do not swallow bait offered by the enemy. Do not interfere with an army that is returning home.

36. When you surround an army, leave an outlet free. Do not press a desperate foe too hard.

37. Such is the art of warfare.

VIII. Variation in tactics

1. Sun Tzu said: In war, the general receives his commands from the sovereign, collects his army and concentrates his forces.

2. When in difficult country, do not encamp. In country where high roads intersect, join hands with your allies. Do not linger in dangerously isolated positions. In hemmed-in situations, you must resort to stratagem. In desperate position, you must fight.

3. There are roads which must not be followed, armies which must be not attacked, towns which must not be besieged, positions which must not be contested, commands of the sovereign which must not be obeyed.

4. The general who thoroughly understands the advantages that accompany variation of tactics knows how to handle his troops.

5. The general who does not understand these, may be well acquainted with the configuration of the country, yet he will not be able to turn his knowledge to practical account.

6. So, the student of war who is unversed in the art of war of varying his plans, even though he be acquainted with the Five Advantages, will fail to make the best use of his men.

7. Hence in the wise leader's plans, considerations of advantage and of disadvantage will be blended together.

8. If our expectation of advantage be tempered in this way, we may succeed in accomplishing the essential part of our schemes.

9. If, on the other hand, in the midst of difficulties we are always ready to seize an advantage, we may extricate ourselves from misfortune.

10. Reduce the hostile chiefs by inflicting damage on them; and make trouble for them, and keep them constantly engaged; hold out specious allurements, and make them rush to any given point.

11. The art of war teaches us to rely not on the likelihood of the enemy's not coming, but on our own readiness to receive him; not on the chance of his not attacking, but rather on the fact that we have made our position unassailable.

12. There are five dangerous faults which may affect a general:

(1) Recklessness, which leads to destruction;

(2) cowardice, which leads to capture;

(3) a hasty temper, which can be provoked by insults;

(4) a delicacy of honor which is sensitive to shame;

(5) over-solicitude for his men, which exposes him to worry and trouble.

13. These are the five besetting sins of a general, ruinous to the conduct of war.

14. When an army is overthrown and its leader slain, the cause will surely be found among these five dangerous faults. Let them be a subject of meditation.

IX. The army on the march

1. Sun Tzu said: We come now to the question of encamping the army, and observing signs of the enemy. Pass quickly over mountains, and keep in the neighborhood of valleys.

2. Camp in high places, facing the sun. Do not climb heights in order to fight. So much for mountain warfare.

3. After crossing a river, you should get far away from it.

4. When an invading force crosses a river in its onward march, do not advance to meet it in mid-stream. It will be best to let half the army get across, and then deliver your attack.

5. If you are anxious to fight, you should not go to meet the invader near a river which he has to cross.

6. Moor your craft higher up than the enemy, and facing the sun. Do not move up-stream to meet the enemy. So much for river warfare.

7. In crossing salt-marshes, your sole concern should be to get over them quickly, without any delay.

8. If forced to fight in a salt-marsh, you should have water and grass near you, and get your back to a clump of trees. So much for operations in salt-marches.

9. In dry, level country, take up an easily accessible position with rising ground to your right and on your rear, so that the danger may be in front, and safety lie behind. So much for campaigning in flat country.

10. These are the four useful branches of military knowledge which enabled the Yellow Emperor to vanquish four several sovereigns.

11. All armies prefer high ground to low and sunny places to dark.

12. If you are careful of your men, and camp on hard ground, the army will be free from disease of every kind, and this will spell victory.

13. When you come to a hill or a bank, occupy the sunny side, with the slope on your right rear. Thus you will at once act for the benefit of your soldiers and utilize the natural advantages of the ground.

14. When, in consequence of heavy rains up-country, a river which you wish to ford is swollen and flecked with foam, you must wait until it subsides.

15. Country in which there are precipitous cliffs with torrents running between, deep natural hollows, confined places, tangled thickets, quagmires and crevasses, should be left with all possible speed and not approached.

16. While we keep away from such places, we should get the enemy to approach them; while we face them, we should let the enemy have them on his rear.

17. If in the neighborhood of your camp there should be any hilly country, ponds surrounded by aquatic grass, hollow basins filled with reeds, or woods with thick undergrowth, they must be carefully routed out and searched; for these are places where men in ambush or insidious spies are likely to be lurking.

18. When the enemy is close at hand and remains quiet, he is relying on the natural strength of his position.

19. When he keeps aloof and tries to provoke a battle, he is anxious for the other side to advance.

20. If his place of encampment is easy of access, he is tendering a bait.

21. Movement amongst the trees of a forest shows that the enemy is advancing. The appearance of a number of screens in the midst of thick grass means that the enemy wants to make us suspicious.

22. The rising of birds in their flight is the sign of an ambuscade. Startled beasts indicate that a sudden attack is coming.

23. When there is dust rising in a high column, it is the sign of chariots advancing; when the dust is low, but spread over a wide area, it betokens the approach of infantry. When it branches out in different directions, it shows that parties have been sent to collect firewood. A few clouds of dust moving to and fro signify that the army is encamping.

24. Humble words and increased preparations are signs that the enemy is about to advance. Violent language and driving forward as if to the attack are signs that he will retreat.

25. When the light chariots come out first and take up a position on the wings, it is a sign that the enemy is forming for battle.

26. Peace proposals unaccompanied by a sworn covenant indicate a plot.

27. When there is much running about and the soldiers fall into rank, it means that the critical moment has come.

28. When some are seen advancing and some retreating, it is a lure.

29. When the soldiers stand leaning on their spears, they are faint from want of food.

30. If those who are sent to draw water begin by drinking themselves, the army is suffering from thirst.

31. If the enemy sees an advantage to be gained and makes no effort to secure it, the soldiers are exhausted.

32. If birds gather on any spot, it is unoccupied. Clamor by night betokens nervousness.

33. If there is disturbance in the camp, the general's authority is weak. If the banners and flags are shifted about, sedition is afoot. If the officers are angry, it means that the men are weary.

34. When an army feeds its horses with grain and kills its cattle for food, and when the men do not hang their cooking-pots over the camp-fires, showing that they will not return to their tents, you may know that they are determined to fight to the death.

35. The sight of men whispering together in small knots or speaking in subdued tones points to disaffection amongst the rank and file.

36. Too frequent rewards signify that the enemy is at the end of his resources; too many punishments betray a condition of dire distress.

37. To begin by bluster, but afterwards to take fright at the enemy's numbers, shows a supreme lack of intelligence.

38. When envoys are sent with compliments in their mouths, it is a sign that the enemy wishes for a truce.

39. If the enemy's troops march up angrily and remain facing ours for a long time without either joining battle or taking themselves off again, the situation is one that demands great vigilance and circumspection.

40. If our troops are no more in number than the enemy, that is amply sufficient; it only means that no direct attack can be made. What we can do is simply to concentrate all our available strength, keep a close watch on the enemy, and obtain reinforcements.

41. He who exercises no forethought but makes light of his opponents is sure to be captured by them.

42. If soldiers are punished before they have grown attached to you, they will not prove submissive; and, unless submissive, then will be practically useless. If, when the soldiers have become attached to you, punishments are not enforced, they will still be useless.

43. Therefore soldiers must be treated in the first instance with humanity, but kept under control by means of iron discipline. This is a certain road to victory.

44. If in training soldiers commands are habitually enforced, the army will be well-disciplined; if not, its discipline will be bad.

45. If a general shows confidence in his men but always insists on his orders being obeyed, the gain will be mutual.

X. Terrain

1. Sun Tzu said: We may distinguish six kinds of terrain, to wit: (1) Accessible ground; (2) entangling ground; (3) temporizing ground; (4) narrow passes; (5) precipitous heights; (6) positions at a great distance from the enemy.

2. Ground which can be freely traversed by both sides is called accessible.

3. With regard to ground of this nature, be before the enemy in occupying the raised and sunny spots, and carefully guard your line of supplies. Then you will be able to fight with advantage.

4. Ground which can be abandoned but is hard to re-occupy is called entangling.

5. From a position of this sort, if the enemy is unprepared, you may sally forth and defeat him. But if the enemy is prepared for your coming, and you fail to defeat him, then, return being impossible, disaster will ensue.

6. When the position is such that neither side will gain by making the first move, it is called temporizing ground.

7. In a position of this sort, even though the enemy should offer us an attractive bait, it will be advisable not to stir forth, but rather to retreat, thus enticing the enemy in his turn; then, when part of his army has come out, we may deliver our attack with advantage.

8. With regard to narrow passes, if you can occupy them first, let them be strongly garrisoned and await the advent of the enemy.

9. Should the army forestall you in occupying a pass, do not go after him if the pass is fully garrisoned, but only if it is weakly garrisoned.

10. With regard to precipitous heights, if you are beforehand with your adversary, you should occupy the raised and sunny spots, and there wait for him to come up.

11. If the enemy has occupied them before you, do not follow him, but retreat and try to entice him away.

12. If you are situated at a great distance from the enemy, and the strength of the two armies is equal, it is not easy to provoke a battle, and fighting will be to your disadvantage.

13. These six are the principles connected with Earth. The general who has attained a responsible post must be careful to study them.

14. Now an army is exposed to six several calamities, not arising from natural causes, but from faults for which the general is responsible. These are: (1) Flight; (2) insubordination; (3) collapse; (4) ruin; (5) disorganization; (6) rout.

15. Other conditions being equal, if one force is hurled against another ten times its size, the result will be the flight of the former.

16. When the common soldiers are too strong and their officers too weak, the result is insubordination. When the officers are too strong and the common soldiers too weak, the result is collapse.

17. When the higher officers are angry and insubordinate, and on meeting the enemy give battle on their own account from a feeling of resentment, before the commander-in-chief can tell whether or not he is in a position to fight, the result is ruin.

18. When the general is weak and without authority; when his orders are not clear and distinct; when there are no fixed duties assigned to officers and men, and the ranks are formed in a slovenly haphazard manner, the result is utter disorganization.

19. When a general, unable to estimate the enemy's strength, allows an inferior force to engage a larger one, or hurls a weak detachment against a powerful one, and neglects to place picked soldiers in the front rank, the result must be rout.

20. These are six ways of courting defeat, which must be carefully noted by the general who has attained a responsible post.

21. The natural formation of the country is the soldier's best ally; but a power of estimating the adversary, of controlling the forces of victory, and of shrewdly calculating difficulties, dangers and distances, constitutes the test of a great general.

22. He who knows these things, and in fighting puts his knowledge into practice, will win his battles. He who knows them not, nor practices them, will surely be defeated.

23. If fighting is sure to result in victory, then you must fight, even though the ruler forbid it; if fighting will not result in victory, then you must not fight even at the ruler's bidding.

24. The general who advances without coveting fame and retreats without fearing disgrace, whose only thought is to protect his country and do good service for his sovereign, is the jewel of the kingdom.

25. Regard your soldiers as your children, and they will follow you into the deepest valleys; look upon them as your own beloved sons, and they will stand by you even unto death.

26. If, however, you are indulgent, but unable to make your authority felt; kind-hearted, but unable to enforce your commands; and incapable, moreover, of quelling disorder: then your soldiers must be likened to spoilt children; they are useless for any practical purpose.

27. If we know that our own men are in a condition to attack, but are unaware that the enemy is not open to attack, we have gone only halfway towards victory.

28. If we know that the enemy is open to attack, but are unaware that our own men are not in a condition to attack, we have gone only halfway towards victory.

29. If we know that the enemy is open to attack, and also know that our men are in a condition to attack, but are unaware that the nature of the ground makes fighting impracticable, we have still gone only halfway towards victory.

30. Hence the experienced soldier, once in motion, is never bewildered; once he has broken camp, he is never at a loss.

31. Hence the saying: If you know the enemy and know yourself, your victory will not stand in doubt; if you know Heaven and know Earth, you may make your victory complete.

XI. The nine situations

1. Sun Tzu said: The art of war recognizes nine varieties of ground: (1) Dispersive ground; (2) facile ground; (3) contentious ground; (4) open ground; (5) ground of intersecting highways; (6) serious ground; (7) difficult ground; (8) hemmed-in ground; (9) desperate ground.

2. When a chieftain is fighting in his own territory, it is dispersive ground.

3. When he has penetrated into hostile territory, but to no great distance, it is facile ground.

4. Ground the possession of which imports great advantage to either side, is contentious ground.

5. Ground on which each side has liberty of movement is open ground.

6. Ground which forms the key to three contiguous states, so that he who occupies it first has most of the Empire at his command, is a ground of intersecting highways.

7. When an army has penetrated into the heart of a hostile country, leaving a number of fortified cities in its rear, it is serious ground.

8. Mountain forests, rugged steeps, marshes and fens – all country that is hard to traverse: this is difficult ground.

9. Ground which is reached through narrow gorges, and from which we can only retire by tortuous paths, so that a small number of the enemy would suffice to crush a large body of our men: this is hemmed-in ground.

10. Ground on which we can only be saved from destruction by fighting without delay, is desperate ground.

11. On dispersive ground, therefore, fight not. On facile ground, halt not. On contentious ground, attack not.

12. On open ground, do not try to block the enemy's way. On the ground of intersecting highways, join hands with your allies.

13. On serious ground, gather in plunder. In difficult ground, keep steadily on the march.

14. On hemmed-in ground, resort to stratagem. On desperate ground, fight.

15. Those who were called skillful leaders of old knew how to drive a wedge between the enemy's front and rear; to prevent co-operation between his large and small divisions; to hinder the good troops from rescuing the bad, the officers from rallying their men.

16. When the enemy's men were united, they managed to keep them in disorder.

17. When it was to their advantage, they made a forward move; when otherwise, they stopped still.

18. If asked how to cope with a great host of the enemy in orderly array and on the point of marching to the attack, I should say: "Begin by seizing something which your opponent holds dear; then he will be amenable to your will."

19. Rapidity is the essence of war: take advantage of the enemy's unreadiness, make your way by unexpected routes, and attack unguarded spots.

20. The following are the principles to be observed by an invading force: The further you penetrate into a country, the greater will be the solidarity of your troops, and thus the defenders will not prevail against you.

21. Make forays in fertile country in order to supply your army with food.

22. Carefully study the well-being of your men, and do not overtax them. Concentrate your energy and hoard your strength. Keep your army continually on the move, and devise unfathomable plans.

23. Throw your soldiers into positions whence there is no escape, and they will prefer death to flight. If they will face death, there is nothing they may not achieve. Officers and men alike will put forth their uttermost strength.

24. Soldiers when in desperate straits lose the sense of fear. If there is no place of refuge, they will stand firm. If they are in hostile country, they will show a stubborn front. If there is no help for it, they will fight hard.

25. Thus, without waiting to be marshaled, the soldiers will be constantly on the qui vive; without waiting to be asked, they will do your will; without restrictions, they will be faithful; without giving orders, they can be trusted.

26. Prohibit the taking of omens, and do away with superstitious doubts. Then, until death itself comes, no calamity need be feared.

27. If our soldiers are not overburdened with money, it is not because they have a distaste for riches; if their lives are not unduly long, it is not because they are disinclined to longevity.

28. On the day they are ordered out to battle, your soldiers may weep, those sitting up bedewing their garments, and those lying down letting the tears run down their cheeks. But let them once be brought to bay, and they will display the courage of a Chu or a Kuei.

29. The skillful tactician may be likened to the shuai-jan. Now the shuai-jan is a snake that is found in the ChUng mountains. Strike at its head, and you will be attacked by its tail; strike at its tail, and you will be attacked by its head; strike at its middle, and you will be attacked by head and tail both.

30. Asked if an army can be made to imitate the shuai-jan, I should answer, Yes. For the men of Wu and the men of Yueh are enemies; yet if they are crossing a river in the same boat and are caught by a storm, they will come to each other's assistance just as the left hand helps the right.

31. Hence it is not enough to put one's trust in the tethering of horses, and the burying of chariot wheels in the ground.

32. The principle on which to manage an army is to set up one standard of courage which all must reach.

33. How to make the best of both strong and weak – that is a question involving the proper use of ground.

34. Thus the skillful general conducts his army just as though he were leading a single man, willy-nilly, by the hand.

35. It is the business of a general to be quiet and thus ensure secrecy; upright and just, and thus maintain order.

36. He must be able to mystify his officers and men by false reports and appearances, and thus keep them in total ignorance.

37. By altering his arrangements and changing his plans, he keeps the enemy without definite knowledge. By shifting his camp and taking circuitous routes, he prevents the enemy from anticipating his purpose.

38. At the critical moment, the leader of an army acts like one who has climbed up a height and then kicks away the ladder behind him. He carries his men deep into hostile territory before he shows his hand.

39. He burns his boats and breaks his cooking-pots; like a shepherd driving a flock of sheep, he drives his men this way and that, and nothing knows whither he is going.

40. To muster his host and bring it into danger:– this may be termed the business of the general.

41. The different measures suited to the nine varieties of ground; the expediency of aggressive or defensive tactics; and the fundamental laws of human nature: these are things that must most certainly be studied.

42. When invading hostile territory, the general principle is, that penetrating deeply brings cohesion; penetrating but a short way means dispersion.

43. When you leave your own country behind, and take your army across neighborhood territory, you find yourself on critical ground. When there are means of communication on all four sides, the ground is one of intersecting highways.

44. When you penetrate deeply into a country, it is serious ground. When you penetrate but a little way, it is facile ground.

45. When you have the enemy's strongholds on your rear, and narrow passes in front, it is hemmed-in ground. When there is no place of refuge at all, it is desperate ground.

46. Therefore, on dispersive ground, I would inspire my men with unity of purpose. On facile ground, I would see that there is close connection between all parts of my army.

47. On contentious ground, I would hurry up my rear.

48. On open ground, I would keep a vigilant eye on my defenses. On ground of intersecting highways, I would consolidate my alliances.

49. On serious ground, I would try to ensure a continuous stream of supplies. On difficult ground, I would keep pushing on along the road.

50. On hemmed-in ground, I would block any way of retreat. On desperate ground, I would proclaim to my soldiers the hopelessness of saving their lives.

51. For it is the soldier's disposition to offer an obstinate resistance when surrounded, to fight hard when he cannot help himself, and to obey promptly when he has fallen into danger.

52. We cannot enter into alliance with neighboring princes until we are acquainted with their designs. We are not fit to lead an army on the march unless we are familiar with the face of the country – its mountains and forests, its pitfalls and precipices, its

marshes and swamps. We shall be unable to turn natural advantages to account unless we make use of local guides.

53. To be ignorant of any one of the following four or five principles does not befit a warlike prince.

54. When a warlike prince attacks a powerful state, his generalship shows itself in preventing the concentration of the enemy's forces. He overawes his opponents, and their allies are prevented from joining against him.

55. Hence he does not strive to ally himself with all and sundry, nor does he foster the power of other states. He carries out his own secret designs, keeping his antagonists in awe. Thus he is able to capture their cities and overthrow their kingdoms.

56. Bestow rewards without regard to rule, issue orders without regard to previous arrangements; and you will be able to handle a whole army as though you had to do with but a single man.

57. Confront your soldiers with the deed itself; never let them know your design. When the outlook is bright, bring it before their eyes; but tell them nothing when the situation is gloomy.

58. Place your army in deadly peril, and it will survive; plunge it into desperate straits, and it will come off in safety.

59. For it is precisely when a force has fallen into harm's way that it is capable of striking a blow for victory.

60. Success in warfare is gained by carefully accommodating ourselves to the enemy's purpose.

61. By persistently hanging on the enemy's flank, we shall succeed in the long run in killing the commander-in-chief.

62. This is called ability to accomplish a thing by sheer cunning.

63. On the day that you take up your command, block the frontier passes, destroy the official tallies, and stop the passage of all emissaries.

64. Be stern in the council-chamber, so that you may control the situation.

65. If the enemy leaves a door open, you must rush in.

66. Forestall your opponent by seizing what he holds dear, and subtly contrive to time his arrival on the ground.

67. Walk in the path defined by rule, and accommodate yourself to the enemy until you can fight a decisive battle.

68. At first, then, exhibit the coyness of a maiden, until the enemy gives you an opening; afterwards emulate the rapidity of a running hare, and it will be too late for the enemy to oppose you.

XII. The attack by fire

1. Sun Tzu said: There are five ways of attacking with fire. The first is to burn soldiers in their camp; the second is to burn stores; the third is to burn baggage trains; the fourth is to burn arsenals and magazines; the fifth is to hurl dropping fire amongst the enemy.

2. In order to carry out an attack, we must have means available. The material for raising fire should always be kept in readiness.

3. There is a proper season for making attacks with fire, and special days for starting a conflagration.

4. The proper season is when the weather is very dry; the special days are those when the moon is in the constellations of the Sieve, the Wall, the Wing or the Cross-bar; for these four are all days of rising wind.

5. In attacking with fire, one should be prepared to meet five possible developments:

6. (1)   When fire breaks out inside the enemy's camp, respond at once with an attack from without.

7. (2)   If there is an outbreak of fire, but the enemy's soldiers remain quiet, bide your time and do not attack.

8. (3)   When the force of the flames has reached its height, follow it up with an attack, if that is practicable; if not, stay where you are.

9. (4)   If it is possible to make an assault with fire from without, do not wait for it to break out within, but deliver your attack at a favorable moment.

10. (5)   When you start a fire, be to windward of it. Do not attack from the leeward.

11. A wind that rises in the daytime lasts long, but a night breeze soon falls.

12. In every army, the five developments connected with fire must be known, the movements of the stars calculated, and a watch kept for the proper days.

13. Hence those who use fire as an aid to the attack show intelligence; those who use water as an aid to the attack gain an accession of strength.

14. By means of water, an enemy may be intercepted, but not robbed of all his belongings.

15. Unhappy is the fate of one who tries to win his battles and succeed in his attacks without cultivating the spirit of enterprise; for the result is waste of time and general stagnation.

16. Hence the saying: The enlightened ruler lays his plans well ahead; the good general cultivates his resources.

17. Move not unless you see an advantage; use not your troops unless there is something to be gained; fight not unless the position is critical.

18. No ruler should put troops into the field merely to gratify his own spleen; no general should fight a battle simply out of pique.

19. If it is to your advantage, make a forward move; if not, stay where you are.

20. Anger may in time change to gladness; vexation may be succeeded by content.

21. But a kingdom that has once been destroyed can never come again into being; nor can the dead ever be brought back to life.

22. Hence the enlightened ruler is heedful, and the good general full of caution. This is the way to keep a country at peace and an army intact.

XIII. *The use of spies*

1. Sun Tzu said: Raising a host of a hundred thousand men and marching them great distances entails heavy loss on the people and a drain on the resources of the State. The daily expenditure will amount to a thousand ounces of silver. There will be commotion at home and abroad, and men will drop down exhausted on the highways. As many as seven hundred thousand families will be impeded in their labor.

2. Hostile armies may face each other for years, striving for the victory which is decided in a single day. This being so, to remain in ignorance of the enemy's condition simply because one grudges the outlay of a hundred ounces of silver in honors and emoluments, is the height of inhumanity.

3. One who acts thus is no leader of men, no present help to his sovereign, no master of victory.

4. Thus, what enables the wise sovereign and the good general to strike and conquer, and achieve things beyond the reach of ordinary men, is foreknowledge.

5. Now this foreknowledge cannot be elicited from spirits; it cannot be obtained inductively from experience, nor by any deductive calculation.

6. Knowledge of the enemy's dispositions can only be obtained from other men.

7. Hence the use of spies, of whom there are five classes: (1) Local spies; (2) inward spies; (3) converted spies; (4) doomed spies; (5) surviving spies.

8. When these five kinds of spy are all at work, none can discover the secret system. This is called "divine manipulation of the threads." It is the sovereign's most precious faculty.

9. Having local spies means employing the services of the inhabitants of a district.

10. Having inward spies, making use of officials of the enemy.

11. Having converted spies, getting hold of the enemy's spies and using them for our own purposes.

12. Having doomed spies, doing certain things openly for purposes of deception, and allowing our spies to know of them and report them to the enemy.

13. Surviving spies, finally, are those who bring back news from the enemy's camp.

14. Hence it is that which none in the whole army are more intimate relations to be maintained than with spies. None should be more liberally rewarded. In no other business should greater secrecy be preserved.

15. Spies cannot be usefully employed without a certain intuitive sagacity.

16. They cannot be properly managed without benevolence and straightforwardness.

17. Without subtle ingenuity of mind, one cannot make certain of the truth of their reports.

18. Be subtle! be subtle! and use your spies for every kind of business.

19. If a secret piece of news is divulged by a spy before the time is ripe, he must be put to death together with the man to whom the secret was told.

20. Whether the object be to crush an army, to storm a city, or to assassinate an individual, it is always necessary to begin by finding out the names of the attendants, the aides-de-camp, and door-keepers and sentries of the general in command. Our spies must be commissioned to ascertain these.

21. The enemy's spies who have come to spy on us must be sought out, tempted with bribes, led away and comfortably housed. Thus they will become converted spies and available for our service.

22. It is through the information brought by the converted spy that we are able to acquire and employ local and inward spies.

23. It is owing to his information, again, that we can cause the doomed spy to carry false tidings to the enemy.

24. Lastly, it is by his information that the surviving spy can be used on appointed occasions.

25. The end and aim of spying in all its five varieties is knowledge of the enemy; and this knowledge can only be derived, in the first instance, from the converted spy. Hence it is essential that the converted spy be treated with the utmost liberality.

26. Of old, the rise of the Yin dynasty was due to I Chih who had served under the Hsia. Likewise, the rise of the Chou dynasty was due to Lu Ya who had served under the Yin.

27. Hence it is only the enlightened ruler and the wise general who will use the highest intelligence of the army for purposes of spying and thereby they achieve great results. Spies are a most important element in water, because on them depends an army's ability to move.

6 Strategy

The indirect approach

Basil Liddell Hart

Strategy has for its purpose the reduction of fighting to the slenderest possible proportions.

Aim of strategy

This statement may be disputed by those who conceive the destruction of the enemy's armed force as the only sound aim in war, who hold that the only goal of strategy is battle, and who are obsessed with the Clausewitzian saying that 'blood is the price of victory'. Yet if one should concede this point and meet its advocates on their own ground, the statement would remain unshaken. For even if a decisive battle be the goal, the aim of strategy must be to bring about this battle under the most advantageous circumstances. And the more advantageous the circumstances, the less, proportionately, will be the fighting.

The perfection of strategy would be, therefore, to produce a decision without any serious fighting. History, as we have seen, provides examples where strategy, helped by favourable conditions, has virtually produced such a result—among the examples being Caesar's Ilerda campaign, Cromwell's Preston campaign, Napoleon's Ulm campaign, Moltke's encirclement of MacMahon's army at Sedan in 1870, and Allenby's 1918 encirclement of the Turks in the hills of Samaria. The most striking and catastrophic of recent examples was the way that, in 1940, the Germans cut off and trapped the Allies' left wing in Belgium, following Guderian's surprise break-through in the centre at Sedan, and thereby ensured the general collapse of the Allied armies on the Continent.

While these were cases where the destruction of the enemy's armed forces was economically achieved through their disarming by surrender, such 'destruction' may not be essential for a decision, and for the fulfilment of the war-aim. In the case of a state that is seeking, not conquest, but the maintenance of its security, the aim is fulfilled if the threat be removed—if the enemy is led to abandon his purpose.

The defeat which Belisarius incurred at Sura through giving rein to his troops' desire for a 'decisive victory'—after the Persians had already given up their attempted invasion of Syria—was a clear example of unnecessary effort and risk. By contrast, the way that he defeated their more dangerous later invasion and cleared them out of Syria, is perhaps the most striking example on record of achieving a decision—in the real sense, of fulfilling the national object—by pure strategy. For in this case, the psychological action

was so effective that the enemy surrendered his purpose without any physical action at all being required.

While such bloodless victories have been exceptional, their rarity enhances rather than detracts from their value—as an indication of latent potentialities, in strategy and grand strategy. Despite many centuries' experience of war, we have hardly begun to explore the field of psychological warfare.

From deep study of war, Clausewitz was led to the conclusion that—'All military action is permeated by intelligent forces and their effects.' Nevertheless, nations at war have always striven, or been driven by their passions, to disregard the implications of such a conclusion. Instead of applying intelligence, they have chosen to batter their heads against the nearest wall.

It rests normally with the government, responsible for the grand strategy of a war, to decide whether strategy should make its contribution by achieving a military decision or otherwise. Just as the military means is only one of the means to the end of grand strategy—one of the instruments in the surgeon's case—so battle is only one of the means to the end of strategy. If the conditions are suitable, it is usually the quickest in effect, but if the conditions are unfavourable it is folly to use it.

Let us assume that a strategist is empowered to seek a military decision. His responsibility is to seek it under the most advantageous circumstances in order to produce the most profitable result. Hence *his true aim is not so much to seek battle as to seek a strategic situation so advantageous that if it does not of itself produce the decision, its continuation by a battle is sure to achieve this*. In other words, dislocation is the aim of strategy; its sequel may be either the enemy's dissolution or his easier disruption in battle. Dissolution may involve some partial measure of fighting, but this has not the character of a battle.

Action of strategy

How is the strategic dislocation produced? In the physical, or 'logistical', sphere it is the result of a move which (*a*) upsets the enemy's dispositions and, by compelling a sudden 'change of front', dislocates the distribution and organization of his forces; (*b*) separates his forces; (*c*) endangers his supplies; (*d*) menaces the route or routes by which he could retreat in case of need and re-establish himself in his base or homeland.

A dislocation may be produced by one of these effects, but is more often the consequence of several. Differentiation, indeed, is difficult because a move directed towards the enemy's rear tends to combine these effects. Their respective influence, however, varies and has varied throughout history according to the size of armies and the complexity of their organization. With armies which 'live on the country', drawing their supplies locally by plunder or requisition, the line of communication has negligible importance. Even in a higher stage of military development, the smaller a force the less dependent it is on the line of communication for supplies. The larger an army, and the more complex its organization, the more prompt and serious in effect is a menace to its line of communication.

Where armies have not been so dependent, strategy has been correspondingly handicapped, and the tactical issue of battle has played a greater part. Nevertheless, even thus handicapped, able strategists have frequently gained a decisive advantage previous to

battle by menacing the enemy's line of retreat, the equilibrium of his dispositions, or his local supplies.

To be effective, such a menace must usually be applied at a point closer, in time and space, to the enemy's army than a menace to his communications; and thus in early warfare it is often difficult to distinguish between the strategical and tactical manœuvre.

In the psychological sphere, dislocation is the result of the impression on the commander's mind of the physical effects which we have listed. The impression is strongly accentuated if his realization of his being at a disadvantage is *sudden*, and if he feels that he is unable to counter the enemy's move. *Psychological dislocation fundamentally springs from this sense of being trapped.*

This is the reason why it has most frequently followed a physical move on to the enemy's rear. An army, like a man, cannot properly defend its back from a blow without turning round to use its arms in the new direction. 'Turning' temporarily unbalances an army as it does a man, and with the former the period of instability is inevitably much longer. In consequence, the brain is much more sensitive to any menace to its back.

In contrast, to move directly on an opponent consolidates his balance, physical and psychological, and by consolidating it increases his resisting power. For in the case of an army it rolls the enemy back towards their reserves, supplies, and reinforcements, so that as the original front is driven back and worn thin, new layers are added to the back. At the most, it imposes a strain rather than producing a shock.

Thus a move round the enemy's front against his rear has the aim not only of avoiding resistance on its way but in its issue. In the profoundest sense, it takes the *line of least resistance*. The equivalent in the psychological sphere is the *line of least expectation*. They are the two faces of the same coin, and to appreciate this is to widen our understanding of strategy. For if we merely take what obviously appears the line of least resistance, its obviousness will appeal to the opponent also; and this line may no longer be that of least resistance.

In studying the physical aspect we must never lose sight of the psychological, and only when both are combined is the strategy truly an indirect approach, calculated to dislocate the opponent's balance.

The mere action of marching indirectly towards the enemy and on to the rear of his dispositions does not constitute a strategic indirect approach. Strategic art is not so simple. Such an approach may start by being indirect in relation to the enemy's front, but by the very directness of its progress towards his rear may allow him to change his dispositions, so that it soon becomes a direct approach to his new front.

Because of the risk that the enemy may achieve such a change of front, it is usually necessary for the dislocating move to be preceded by a move, or moves, which can best be defined by the term 'distract' in its literal sense of 'to draw asunder'. The purpose of this 'distraction' is to *deprive the enemy of his freedom of action*, and it should operate in both the physical and psychological spheres. In the physical, it should cause a distension of his forces or their diversion to unprofitable ends, so that they are too widely distributed, and too committed elsewhere, to have the power of interfering with one's own decisively intended move. In the psychological sphere, the same effect is sought by playing upon the fears of, and by deceiving, the opposing command. 'Stonewall' Jackson aptly expressed this in his strategical motto—'Mystify, mislead, and surprise'. For to mystify

and to mislead constitutes 'distraction', while surprise is the essential cause of 'dislocation'. It is through the 'distraction' of the commander's mind that the distraction of his forces follows. The loss of his freedom of action is the sequel to the loss of his freedom of conception.

A more profound appreciation of how the psychological permeates and dominates the physical sphere has an indirect value. For it warns us of the fallacy and shallowness of attempting to analyse and theorize about strategy in terms of mathematics. To treat it quantitatively, as if the issue turned merely on a superior concentration of force at a selected place, is as faulty as to treat it geometrically: as a matter of lines and angles.

Even more remote from truth—because in practice it usually leads to a dead end—is the tendency of text-books to treat war as mainly a matter of concentrating superior force. In his celebrated definition of economy of force Foch termed this—'The art of pouring out *all* one's resources at a given moment on one spot; of making use there of *all* troops, and, to make such a thing possible, of making those troops permanently communicate with each other, instead of dividing them and attaching to each fraction some fixed and invariable function; its second part, a result having been attained, is the art of again so disposing the troops as to converge upon, and act against, a new single objective.'

It would have been more exact, and more lucid, to say that an army should always be so distributed that its parts can aid each other and combine to produce the maximum *possible* concentration of force at one place, while the minimum force *necessary* is used elsewhere to prepare the success of the concentration.

To concentrate *all* is an unrealizable ideal, and dangerous even as a hyperbole. Moreover, in practice the 'minimum necessary' may form a far larger proportion of the total than the 'maximum possible'. It would even be true to say that the larger the force that is effectively used for *distraction* of the enemy, the greater is the chance of the concentration succeeding in its aim. For otherwise it may strike an object too solid to be shattered.

Superior weight at the intended decisive point does not suffice unless that point cannot be reinforced *in time* by the opponent. It rarely suffices unless that point is not merely weaker numerically but has been weakened morally. Napoleon suffered some of his worst checks because he neglected this guarantee—and the need for distraction has grown with the delaying power of weapons.

7 Arms and influence

Thomas C. Schelling

The diplomacy of violence

The usual distinction between diplomacy and force is not merely in the instruments, words or bullets, but in the relation between adversaries—in the interplay of motives and the role of communication, understandings, compromise, and restraint. Diplomacy is bargaining; it seeks outcomes that, though not ideal for either party, are better for both than some of the alternatives. In diplomacy each party somewhat controls what the other wants, and can get more by compromise, exchange, or collaboration than by taking things in his own hands and ignoring the other's wishes. The bargaining can be polite or rude, entail threats as well as offers, assume a status quo or ignore all rights and privileges, and assume mistrust rather than trust. But whether polite or impolite, constructive or aggressive, respectful or vicious, whether it occurs among friends or antagonists and whether or not there is a basis for trust and goodwill, there must be some common interest, if only in the avoidance of mutual damage, and an awareness of the need to make the other party prefer an outcome acceptable to oneself.

With enough military force a country may not need to bargain. Some things a country wants it can take, and some things it has it can keep, by sheer strength, skill and ingenuity. It can do this *forcibly*, accommodating only to opposing strength, skill, and ingenuity and without trying to appeal to an enemy's wishes. Forcibly a country can repel and expel, penetrate and occupy, seize, exterminate, disarm and disable, confine, deny access, and directly frustrate intrusion or attack. It can, that is, if it has enough strength. "Enough" depends on how much an opponent has.

There is something else, though, that force can do. It is less military, less heroic, less impersonal, and less unilateral; it is uglier, and has received less attention in Western military strategy. In addition to seizing and holding, disarming and confining, penetrating and obstructing, and all that, military force can be used *to hurt*. In addition to taking and protecting things of value it can *destroy* value. In addition to weakening an enemy militarily it can cause an enemy plain suffering.

Pain and shock, loss and grief, privation and horror are always in some degree, sometimes in terrible degree, among the results of warfare; but in traditional military science they are incidental, they are not the object. If violence can be done incidentally, though, it can also be done purposely. The power to hurt can be counted among the most impressive attributes of military force.

Hurting, unlike forcible seizure or self-defense, is not unconcerned with the interest of others. It is measured in the suffering it can cause and the victims' motivation to avoid it. Forcible action will work against weeds or floods as well as against armies, but suffering requires a victim that can feel pain or has something to lose. To inflict suffering gains nothing and saves nothing directly; it can only make people behave to avoid it. The only purpose, unless sport or revenge, must be to influence somebody's behavior, to coerce his decision or choice. To be coercive, violence has to be anticipated. And it has to be avoidable by accommodation. The power to hurt is bargaining power. To exploit it is diplomacy—vicious diplomacy, but diplomacy.

The contrast of brute force with coercion

There is a difference between taking what you want and making someone give it to you, between fending off assault and making someone afraid to assault you, between holding what people are trying to take and making them afraid to take it, between losing what someone can forcibly take and giving it up to avoid risk or damage. It is the difference between defense and deterrence, between brute force and intimidation, between conquest and blackmail, between action and threats. It is the difference between the unilateral, "undiplomatic" recourse to strength, and coercive diplomacy based on the power to hurt.

The contrasts are several. The purely "military" or "undiplomatic" recourse to forcible action is concerned with enemy strength, not enemy interests; the coercive use of the power to hurt, though, is the very exploitation of enemy wants and fears. And brute strength is usually measured relative to enemy strength, the one directly opposing the other, while the power to hurt is typically not reduced by the enemy's power to hurt in return. Opposing strengths may cancel each other, pain and grief do not. The willingness to hurt, the credibility of a threat, and the ability to exploit the power to hurt will indeed depend on how much the adversary can hurt in return; but there is little or nothing about an adversary's pain or grief that directly reduces one's own. Two sides cannot both overcome each other with superior strength; they may both be able to hurt each other. With strength they can dispute objects of value; with sheer violence they can destroy them.

And brute force succeeds when it is used, whereas the power to hurt is most successful when held in reserve. It is the *threat* of damage, or of more damage to come, that can make someone yield or comply. It is *latent* violence that can influence someone's choice—violence that can still be withheld or inflicted, or that a victim believes can be withheld or inflicted. The threat of pain tries to structure someone's motives, while brute force tries to overcome his strength. Unhappily, the power to hurt is often communicated by some performance of it. Whether it is sheer terroristic violence to induce an irrational response, or cool premeditated violence to persuade somebody that you mean it and may do it again, it is not the pain and damage itself but its influence on somebody's behavior that matters. It is the expectation of *more* violence that gets the wanted behavior, if the power to hurt can get it at all.

To exploit a capacity for hurting and inflicting damage one needs to know what an adversary treasures and what scares him and one needs the adversary to understand

what behavior of his will cause the violence to be inflicted and what will cause it to be withheld. The victim has to know what is wanted, and he may have to be assured of what is not wanted. The pain and suffering have to appear *contingent* on his behavior; it is not alone the threat that is effective—the threat of pain or loss if he fails to comply— but the corresponding assurance, possibly an implicit one, that he can avoid the pain or loss if he does comply. The prospect of certain death may stun him, but it gives him no choice.

Coercion by threat of damage also requires that our interests and our opponent's not be absolutely opposed. If his pain were our greatest delight and our satisfaction his greatest woe, we would just proceed to hurt and to frustrate each other. It is when his pain gives us little or no satisfaction compared with what he can do for us, and the action or inaction that satisfies us costs him less than the pain we can cause, that there is room for coercion. Coercion requires finding a bargain, arranging for him to be better off doing what we want—worse off not doing what we want—when he takes the threatened penalty into account.

It is this capacity for pure damage, pure violence, that is usually associated with the most vicious labor disputes, with racial disorders, with civil uprisings and their suppression, with racketeering. It is also the power to hurt rather than brute force that we use in dealing with criminals; we hurt them afterward, or threaten to, for their misdeeds rather than protect ourselves with cordons of electric wires, masonry walls, and armed guards. Jail, of course, can be either forcible restraint or threatened privation; if the object is to keep criminals out of mischief by confinement, success is measured by how many of them are gotten behind bars, but if the object is to *threaten* privation, success will be measured by how few have to be put behind bars and success then depends on the subject's understanding of the consequences. Pure damage is what a car threatens when it tries to hog the road or to keep its rightful share, or to go first through an intersection. A tank or a bulldozer can force its way regardless of others' wishes; the rest of us have to threaten damage, usually mutual damage, hoping the other driver values his car or his limbs enough to give way, hoping he sees us, and hoping he is in control of his own car. The threat of pure damage will not work against an unmanned vehicle.

This difference between coercion and brute force is as often in the intent as in the instrument. To hunt down Comanches and to exterminate them was brute force; to raid their villages to make them behave was coercive diplomacy, based on the power to hurt. The pain and loss to the Indians might have looked much the same one way as the other; the difference was one of purpose and effect. If Indians were killed because they were in the way, or somebody wanted their land, or the authorities despaired of making them behave and could not confine them and decided to exterminate them, that was pure unilateral force. If *some* Indians were killed to make *other* Indians behave, that was coercive violence—or intended to be, whether or not it was effective. The Germans at Verdun perceived themselves to be chewing up hundreds of thousands of French soldiers in a gruesome "meatgrinder." If the purpose was to eliminate a military obstacle—the French infantryman, viewed as a military "asset" rather than as a warm human being— the offensive at Verdun was a unilateral exercise of military force. If instead the object was to make the loss of young men—not of impersonal "effectives," but of sons, husbands, fathers, and the pride of French manhood—so anguishing as to be unendurable, to

make surrender a welcome relief and to spoil the foretaste of an Allied victory, then it was an exercise in coercion, in applied violence, intended to offer relief upon accommodation. And of course, since any use of force tends to be brutal, thoughtless, vengeful, or plain obstinate, the motives themselves can be mixed and confused. The fact that heroism and brutality can be either coercive diplomacy or a contest in pure strength does not promise that the distinction will be made, and the strategies enlightened by the distinction, every time some vicious enterprise gets launched.

The contrast between brute force and coercion is illustrated by two alternative strategies attributed to Genghis Khan. Early in his career he pursued the war creed of the Mongols: the vanquished can never be the friends of the victors, their death is necessary for the victor's safety. This was the unilateral extermination of a menace or a liability. The turning point of his career, according to Lynn Montross, came later when he discovered how to use his power to hurt for diplomatic ends. "The great Khan, who was not inhibited by the usual mercies, conceived the plan of forcing captives—women, children, aged fathers, favorite sons—to march ahead of his army as the first potential victims of resistance."[1] Live captives have often proved more valuable than enemy dead; and the technique discovered by the Khan in his maturity remains contemporary. North Koreans and Chinese were reported to have quartered prisoners of war near strategic targets to inhibit bombing attacks by United Nations aircraft. Hostages represent the power to hurt in its purest form.

Coercive violence in warfare

This distinction between the power to hurt and the power to seize or hold forcibly is important in modern war, both big war and little war, hypothetical war and real war. For many years the Greeks and the Turks on Cyprus could hurt each other indefinitely but neither could quite take or hold forcibly what they wanted or protect themselves from violence by physical means. The Jews in Palestine could not expel the British in the late 1940s but they could cause pain and fear and frustration through terrorism, and eventually influence somebody's decision. The brutal war in Algeria was more a contest in pure violence than in military strength; the question was who would first find the pain and degradation unendurable. The French troops preferred—indeed they continually tried—to make it a contest of strength, to pit military force against the nationalists' capacity for terror, to exterminate or disable the nationalists and to screen off the nationalists from the victims of their violence. But because in civil war terrorists commonly have access to victims by sheer physical propinquity, the victims and their properties could not be forcibly defended and in the end the French troops themselves resorted, unsuccessfully, to a war of pain.

Nobody believes that the Russians can take Hawaii from us, or New York, or Chicago, but nobody doubts that they might destroy people and buildings in Hawaii, Chicago, or New York. Whether the Russians can conquer West Germany in any meaningful sense is questionable; whether they can hurt it terribly is not doubted. That the United States can destroy a large part of Russia is universally taken for granted; that the United States can keep from being badly hurt, even devastated, in return, or can keep Western Europe from being devastated while itself destroying Russia, is at best arguable; and it is

virtually out of the question that we could conquer Russia territorially and use its economic assets unless it were by threatening disaster and inducing compliance. It is the power to hurt, not military strength in the traditional sense, that inheres in our most impressive military capabilities at the present time. We have a Department of *Defense* but emphasize *retaliation*—"to return evil for evil" (synonyms: requital, reprisal, revenge, vengeance, retribution). And it is pain and violence, not force in the traditional sense, that inheres also in some of the least impressive military capabilities of the present time—the plastic bomb, the terrorist's bullet, the burnt crops, and the tortured farmer.

War appears to be, or threatens to be, not so much a contest of strength as one of endurance, nerve, obstinacy, and pain. It appears to be, and threatens to be, not so much a contest of military strength as a bargaining process—dirty, extortionate, and often quite reluctant bargaining on one side or both—nevertheless a bargaining process.

The difference cannot quite be expressed as one between the *use* of force and the *threat* of force. The actions involved in forcible accomplishment, on the one hand, and in fulfilling a threat, on the other, can be quite different. Sometimes the most effective direct action inflicts enough cost or pain on the enemy to serve as a threat, sometimes not. The United States threatens the Soviet Union with virtual destruction of its society in the event of a surprise attack on the United States; a hundred million deaths are awesome as pure damage, but they are useless in stopping the Soviet attack—especially if the threat is to do it all afterward anyway. So it is worth while to keep the concepts distinct—to distinguish forcible action from the threat of pain—recognizing that some actions serve as both a means of forcible accomplishment and a means of inflicting pure damage, some do not. Hostages tend to entail almost pure pain and damage, as do all forms of reprisal after the fact. Some modes of self-defense may exact so little in blood or treasure as to entail negligible violence; and some forcible actions entail so much violence that their threat can be effective by itself.

The power to hurt, though it can usually accomplish nothing directly, is potentially more versatile than a straightforward capacity for forcible accomplishment. By force alone we cannot even lead a horse to water—we have to drag him—much less make him drink. Any affirmative action, any collaboration, almost anything but physical exclusion, expulsion, or extermination, requires that an opponent or a victim *do* something, even if only to stop or get out. The threat of pain and damage may make him want to do it, and anything he can do is potentially susceptible to inducement. Brute force can only accomplish what requires no collaboration. The principle is illustrated by a technique of unarmed combat: one can disable a man by various stunning, fracturing, or killing blows, but to take him to jail one has to exploit the man's own efforts. "Come-along" holds are those that threaten pain or disablement, giving relief as long as the victim complies, giving him the option of using his own legs to get to jail.

We have to keep in mind, though, that what is pure pain, or the threat of it, at one level of decision can be equivalent to brute force at another level. Churchill was worried, during the early bombing raids on London in 1940, that Londoners might panic. Against people the bombs were pure violence, to induce their undisciplined evasion; to Churchill and the government, the bombs were a cause of inefficiency, whether they spoiled transport and made people late to work or scared people and made them afraid to work.

Churchill's decisions were not going to be coerced by the fear of a few casualties. Similarly on the battlefield: tactics that frighten soldiers so that they run, duck their heads, or lay down their arms and surrender represent coercion based on the power to hurt; to the top command, which is frustrated but not coerced, such tactics are part of the contest in military discipline and strength.

The fact that violence—pure pain and damage—can be used or threatened to coerce and to deter, to intimidate and to blackmail, to demoralize and to paralyze, in a conscious process of dirty bargaining, does not by any means imply that violence is not often wanton and meaningless or, even when purposive, in danger of getting out of hand. Ancient wars were often quite "total" for the loser, the men being put to death, the women sold as slaves, the boys castrated, the cattle slaughtered, and the buildings leveled, for the sake of revenge, justice, personal gain, or merely custom. If an enemy bombs a city, by design or by carelessness, we usually bomb his if we can. In the excitement and fatigue of warfare, revenge is one of the few satisfactions that can be savored; and justice can often be construed to demand the enemy's punishment, even if it is delivered with more enthusiasm than justice requires. When Jerusalem fell to the Crusaders in 1099 the ensuing slaughter was one of the bloodiest in military chronicles. "The men of the West literally waded in gore, their march to the church of the Holy Sepulcher being gruesomely likened to 'treading out the wine press' . . .," reports Montross (p. 138), who observes that these excesses usually came at the climax of the capture of a fortified post or city. "For long the assailants have endured more punishment than they were able to inflict; then once the walls are breached, pent-up emotions find an outlet in murder, rape and plunder, which discipline is powerless to prevent." The same occurred when Tyre fell to Alexander after a painful siege, and the phenomenon was not unknown on Pacific islands in the Second World War. Pure violence, like fire, can be harnessed to a purpose; that does not mean that behind every holocaust is a shrewd intention successfully fulfilled.

But if the occurrence of violence does not always bespeak a shrewd purpose, the absence of pain and destruction is no sign that violence was idle. Violence is most purposive and most successful when it is threatened and not used. Successful threats are those that do not have to be carried out. By European standards, Denmark was virtually unharmed in the Second World War; it was violence that made the Danes submit. Withheld violence—successfully threatened violence—can look clean, even merciful. The fact that a kidnap victim is returned unharmed, against receipt of ample ransom, does not make kidnapping a nonviolent enterprise. The American victory at Mexico City in 1847 was a great success; with a minimum of brutality we traded a capital city for everything we wanted from the war. We did not even have to say what we could do to Mexico City to make the Mexican government understand what they had at stake. (They had undoubtedly got the message a month earlier, when Vera Cruz was being pounded into submission. After forty-eight hours of shellfire, the foreign consuls in that city approached General Scott's headquarters to ask for a truce so that women, children, and neutrals could evacuate the city. General Scott, "counting on such internal pressure to help bring about the city's surrender," refused their request and added that anyone, soldier or noncombatant, who attempted to leave the city would be fired upon.)[2]

Whether spoken or not, the threat is usually there. In earlier eras the etiquette was more permissive. When the Persians wanted to induce some Ionian cities to surrender and join them, without having to fight them, they instructed their ambassadors to

> make your proposals to them and promise that, if they abandon their allies, there will be no disagreeable consequences for them; we will not set fire to their houses or temples, or threaten them with any greater harshness than before this trouble occurred. If, however, they refuse, and insist upon fighting, then you must resort to threats, and say exactly what we will do to them; tell them, that is, that when they are beaten they will be sold as slaves, their boys will be made eunuchs, their girls carried off to Bactria, and their land confiscated.[3]

It sounds like Hitler talking to Schuschnigg. "I only need to give an order, and overnight all the ridiculous scarecrows on the frontier will vanish . . . Then you will really experience something. . . . After the troops will follow the S.A. and the Legion. No one will be able to hinder the vengeance, not even myself."

Or Henry V before the gates of Harfleur:

> We may as bootless spend our vain command
> Upon the enraged soldiers in their spoil
> As send precepts to the leviathan
> To come ashore. Therefore, you men of Harfleur,
> Take pity of your town and of your people,
> Whiles yet my soldiers are in my command;
> Whiles yet the cool and temperate wind of grace
> O'erblows the filthy and contagious clouds
> Of heady murder, spoil and villainy.
> If not, why, in a moment look to see
> The blind and bloody soldier with foul hand
> Defile the locks of your shrill-shrieking daughters;
> Your fathers taken by the silver beard,
> And their most reverent heads dash'd to the walls,
> Your naked infants spitted upon pikes,
> Whiles the mad mothers with their howls confused
> Do break the clouds . . .
> What say you? will you yield, and this avoid,
> Or, guilty in defence, be thus destroy'd?
> (Act III, Scene iii)

Pure violence, nonmilitary violence, appears most conspicuously in relations between unequal countries, where there is no substantial military challenge and the outcome of military engagement is not in question. Hitler could make his threats contemptuously and brutally against Austria; he could make them, if he wished, in a more refined way against Denmark. It is noteworthy that it was Hitler, not his generals, who used this kind of langauge; proud military establishments do not like to think of themselves as

extortionists. Their favorite job is to deliver victory, to dispose of opposing military force and to leave most of the civilian violence to politics and diplomacy. But if there is no room for doubt how a contest in strength will come out, it may be possible to bypass the military stage altogether and to proceed at once to the coercive bargaining.

A typical confrontation of unequal forces occurs at the *end* of a war, between victor and vanquished. Where Austria was vulnerable before a shot was fired, France was vulnerable after its military shield had collapsed in 1940. Surrender negotiations are the place where the threat of civil violence can come to the fore. Surrender negotiations are often so one-sided, or the potential violence so unmistakable, that bargaining succeeds and the violence remains in reserve. But the fact that most of the actual damage was done during the military stage of the war, prior to victory and defeat, does not mean that violence was idle in the aftermath, only that it was latent and the threat of it successful.

Indeed, victory is often but a prerequisite to the exploitation of the power to hurt. When Xenophon was fighting in Asia Minor under Persian leadership, it took military strength to disperse enemy soldiers and occupy their lands; but land was not what the victor wanted, nor was victory for its own sake.

> Next day the Persian leader burned the villages to the ground, not leaving a single house standing, so as to strike terror into the other tribes to show them what would happen if they did not give in . . . . He sent some of the prisoners into the hills and told them to say that if the inhabitants did not come down and settle in their houses to submit to him, he would burn up their villages too and destroy their crops, and they would die of hunger.[4]

Military victory was but the *price of admission*. The payoff depended upon the successful threat of violence.

Like the Persian leader, the Russians crushed Budapest in 1956 and cowed Poland and other neighboring countries. There was a lag of ten years between military victory and this show of violence, but the principle was the one explained by Xenophon. Military victory is often the prelude to violence, not the end of it, and the fact that successful violence is usually held in reserve should not deceive us about the role it plays.

What about pure violence during war itself, the infliction of pain and suffering as a military technique? Is the threat of pain involved only in the political use of victory, or is it a decisive technique of war itself?

Evidently between unequal powers it has been part of warfare. Colonial conquest has often been a matter of "punitive expeditions" rather than genuine military engagements. If the tribesmen escape into the bush you can burn their villages without them until they assent to receive what, in strikingly modern language, used to be known as the Queen's "protection." British air power was used punitively against Arabian tribesmen in the 1920s and 30s to coerce them into submission.[5]

If enemy forces are not strong enough to oppose, or are unwilling to engage, there is no need to achieve victory as a prerequisite to getting on with a display of coercive violence. When Caesar was pacifying the tribes of Gaul he sometimes had to fight his way through their armed men in order to subdue them with a display of punitive

violence, but sometimes he was virtually unopposed and could proceed straight to the punitive display. To his legions there was more valor in fighting their way to the seat of power; but, as governor of Gaul, Caesar could view enemy troops only as an obstacle to his political control, and that control was usually based on the power to inflict pain, grief, and privation. In fact, he preferred to keep several hundred hostages from the unreliable tribes, so that his threat of violence did not even depend on an expedition into the countryside.

Pure hurting, as a military tactic, appeared in some of the military actions against the plains Indians. In 1868, during the war with the Cheyennes, General Sheridan decided that his best hope was to attack the Indians in their winter camps. His reasoning was that the Indians could maraud as they pleased during the seasons when their ponies could subsist on grass, and in winter hide away in remote places. "To disabuse their minds from the idea that they were secure from punishment, and to strike at a period when they were helpless to move their stock and villages, a winter campaign was projected against the large bands hiding away in the Indian territory."[6]

These were not military engagements; they were punitive attacks on people. They were an effort to subdue by the use of violence, without a futile attempt to draw the enemy's military forces into decisive battle. They were "massive retaliation" on a diminutive scale, with local effects not unlike those of Hiroshima. The Indians themselves totally lacked organization and discipline, and typically could not afford enough ammunition for target practice and were no military match for the cavalry; their own rudimentary strategy was at best one of harassment and reprisal. Half a century of Indian fighting in the West left us a legacy of cavalry tactics; but it is hard to find a serious treatise on American strategy against the Indians or Indian strategy against the whites. The twentieth is not the first century in which "retaliation" has been part of our strategy, but it is the first in which we have systematically recognized it.

Hurting, as a strategy, showed up in the American Civil War, but as an episode, not as the central strategy. For the most part, the Civil War was a military engagement with each side's military force pitted against the other's. The Confederate forces hoped to lay waste enough Union territory to negotiate their independence, but hadn't enough capacity for such violence to make it work. The Union forces were intent on military victory, and it was mainly General Sherman's march through Georgia that showed a conscious and articulate use of violence. "If the people raise a howl against my barbarity and cruelty, I will answer that war is war . . . If they want peace, they and their relatives must stop the war," Sherman wrote. And one of his associates said, "Sherman is perfectly right . . . The only possible way to end this unhappy and dreadful conflict . . . is to make it terrible beyond endurance."[7]

Making it "terrible beyond endurance" is what we associate with Algeria and Palestine, the crushing of Budapest and the tribal warfare in Central Africa. But in the great wars of the last hundred years it was usually military victory, not the hurting of the people, that was decisive; General Sherman's attempt to make war hell for the Southern people did not come to epitomize military strategy for the century to follow. To seek out and to destroy the enemy's military force, to achieve a crushing victory over enemy armies, was still the avowed purpose and the central aim of American strategy in both world wars. Military action was seen as an *alternative* to bargaining, not a *process* of bargaining.

The reason is not that civilized countries are so averse to hurting people that they prefer "purely military" wars. (Nor were all of the participants in these wars entirely civilized.) The reason is apparently that the technology and geography of warfare, at least for a war between anything like equal powers during the century ending in World War II, kept coercive violence from being decisive before military victory was achieved. Blockade indeed was aimed at the whole enemy nation, not concentrated on its military forces; the German civilians who died of influenza in the First World War were victims of violence directed at the whole country. It has never been quite clear whether blockade—of the South in the Civil War or of the Central Powers in both world wars, or submarine warfare against Britain—was expected to make war unendurable for the people or just to weaken the enemy forces by denying economic support. Both arguments were made, but there was no need to be clear about the purpose as long as either purpose was regarded as legitimate and either might be served. "Strategic bombing" of enemy homelands was also occasionally rationalized in terms of the pain and privation it could inflict on people and the civil damage it could do to the nation, as an effort to display either to the population or to the enemy leadership that surrender was better than persistence in view of the damage that could be done. It was also rationalized in more "military" terms, as a way of selectively denying war material to the troops or as a way of generally weakening the economy on which the military effort rested.[8]

But as terrorism—as violence intended to coerce the enemy rather than to weaken him militarily—blockade and strategic bombing by themselves were not quite up to the job in either world war in Europe. (They might have been sufficient in the war with Japan after straightforward military action had brought American aircraft into range.) Airplanes could not quite make punitive, coercive violence decisive in Europe, at least on a tolerable time schedule, and preclude the need to defeat or to destroy enemy forces as long as they had nothing but conventional explosives and incendiaries to carry. Hitler's V-1 buzz bomb and his V-2 rocket are fairly pure cases of weapons whose purpose was to intimidate, to hurt Britain itself rather than Allied military forces. What the V-2 needed was a punitive payload worth carrying, and the Germans did not have it. Some of the expectations in the 1920s and the 1930s that another major war would be one of pure civilian violence, of shock and terror from the skies, were not borne out by the available technology. The threat of punitive violence kept occupied countries quiescent; but the wars were won in Europe on the basis of brute strength and skill and not by intimidation, not by the threat of civilian violence but by the application of military force. Military victory was still the price of admission. Latent violence against people was reserved for the politics of surrender and occupation.

The great exception was the two atomic bombs on Japanese cities. These were weapons of terror and shock. They hurt, and promised more hurt, and that was their purpose. The few "small" weapons we had were undoubtedly of some direct military value, but their enormous advantage was in pure violence. In a military sense the United States could gain a little by destruction of two Japanese industrial cities; in a civilian sense, the Japanese could lose much. The bomb that hit Hiroshima was a threat aimed at all of Japan. The political target of the bomb was not the dead of Hiroshima or the factories they worked in, but the survivors in Tokyo. The two bombs were in the

tradition of Sheridan against the Comanches and Sherman in Georgia. Whether in the end those two bombs saved lives or wasted them, Japanese lives or American lives; whether punitive coercive violence is uglier than straightforward military force or more civilized; whether terror is more or less humane than military destruction; we can at least perceive that the bombs on Hiroshima and Nagasaki represented violence against the country itself and not mainly an attack on Japan's material strength. The effect of the bombs, and their purpose, were not mainly the military destruction they accomplished but the pain and the shock and the promise of more.

The nuclear contribution to terror and violence

Man has, it is said, for the first time in history enough military power to eliminate his species from the earth, weapons against which there is no conceivable defense. War has become, it is said, so destructive and terrible that it ceases to be an instrument of national power. "For the first time in human history," says Max Lerner in a book whose title, *The Age of Overkill*, conveys the point, "men have bottled up a power . . . which they have thus far not dared to use."[9] And Soviet military authorities, whose party dislikes having to accommodate an entire theory of history to a single technological event, have had to reexamine a set of principles that had been given the embarrassing name of "permanently operating factors" in warfare. Indeed, our era is epitomized by words like "the first time in human history," and by the abdication of what was "permanent."

For dramatic impact these statements are splendid. Some of them display a tendency, not at all necessary, to belittle the catastrophe of earlier wars. They may exaggerate the historical novelty of deterrence and the balance of terror.[10] More important, they do not help to identify just what is new about war when so much destructive energy can be packed in warheads at a price that permits advanced countries to have them in large numbers. Nuclear warheads are incomparably more devastating than anything packaged before. What does that imply about war?

It is not true that for the first time in history man has the capability to destroy a large fraction, even the major part, of the human race. Japan was defenseless by August 1945. With a combination of bombing and blockade, eventually invasion, and if necessary the deliberate spread of disease, the United States could probably have exterminated the population of the Japanese islands without nuclear weapons. It would have been a gruesome, expensive, and mortifying campaign; it would have taken time and demanded persistence. But we had the economic and technical capacity to do it; and, together with the Russians or without them, we could have done the same in many populous parts of the world. Against defenseless people there is not much that nuclear weapons can do that cannot be done with an ice pick. And it would not have strained our Gross National Product to do it with ice picks.

It is a grisly thing to talk about. We did not do it and it is not imaginable that we would have done it. We had no reason; if we had had a reason, we would not have the persistence of purpose, once the fury of war had been dissipated in victory and we had taken on the task of executioner. If we and our enemies might do such a thing to each other now, and to others as well, it is not because nuclear weapons have for the first time made it feasible.

Nuclear weapons can do it quickly. That makes a difference. When the Crusaders breached the walls of Jerusalem they sacked the city while the mood was on them. They burned things that they might, with time to reflect, have carried away instead and raped women that, with time to think about it, they might have married instead. To compress a catastrophic war within the span of time that a man can stay awake drastically changes the politics of war, the process of decision, the possibility of central control and restraint, the motivations of people in charge, and the capacity to think and reflect while war is in progress. It *is* imaginable that we might destroy 200,000,000 Russians in a war of the present, though not 80,000,000 Japanese in a war of the past. It is not only imaginable, it is imagined. It is imaginable because it could be done "in a moment, in the twinkling of an eye, at the last trumpet."

This may be why there is so little discussion of how an all-out war might be brought to a close. People do not expect it to be "brought" to a close, but just to come to an end when everything has been spent. It is also why the idea of "limited war" has become so explicit in recent years. Earlier wars, like World Wars I and II or the Franco-Prussian War, were limited by *termination*, by an ending that occurred before the period of greatest potential violence, by negotiation that brought the *threat* of pain and privation to bear but often precluded the massive *exercise* of civilian violence. With nuclear weapons available, the restraint of violence cannot await the outcome of a contest of military strength; restraint, to occur at all, must occur during war itself.

This is a difference between nuclear weapons and bayonets. It is not in the number of people they can eventually kill but in the speed with which it can be done, in the centralization of decision, in the divorce of the war from political processes, and in computerized programs that threaten to take the war out of human hands once it begins.

That nuclear weapons make it *possible* to compress the fury of global war into a few hours does not mean that they make it *inevitable*. We have still to ask whether that is the way a major nuclear war would be fought, or ought to be fought. Nevertheless, that the whole war might go off like one big string of fire-crackers makes a critical difference between our conception of nuclear war and the world wars we have experienced.

There is no guarantee, of course, that a slower war would not persist. The First World War could have stopped at any time after the Battle of the Marne. There was plenty of time to think about war aims, to consult the long-range national interest, to reflect on costs and casualties already incurred and the prospect of more to come, and to discuss terms of cessation with the enemy. The gruesome business continued as mechanically as if it had been in the hands of computers (or worse: computers might have been programmed to learn more quickly from experience). One may even suppose it would have been a blessing had all the pain and shock of the four years been compressed within four days. Still, it was terminated. And the victors had no stomach for doing then with bayonets what nuclear weapons could do to the German people today.

There is another difference. In the past it has usually been the victors who could do what they pleased to the enemy. War has often been "total war" for the loser. With deadly monotony the Persians, Greeks, or Romans "put to death all men of military age, and sold the women and children into slavery," leaving the defeated territory nothing

but its name until new settlers arrived sometime later. But the defeated could not do the same to their victors. The boys could be castrated and sold only after the war had been won, and only on the side that lost it. The power to hurt could be brought to bear only after military strength had achieved victory. The same sequence characterized the great wars of this century; for reasons of technology and geography, military force has usually had to penetrate, to exhaust, or to collapse opposing military force—to achieve military victory—before it could be brought to bear on the enemy nation itself. The Allies in World War I could not inflict coercive pain and suffering directly on the Germans in a decisive way until they could defeat the German army; and the Germans could not coerce the French people with bayonets unless they first beat the Allied troops that stood in their way. With two-dimensional warfare, there is a tendency for troops to confront each other, shielding their own lands while attempting to press into each other's. Small penetrations could not do major damage to the people; large penetrations were so destructive of military organization that they usually ended the military phase of the war.

Nuclear weapons make it possible to do monstrous violence to the enemy without first achieving victory. With nuclear weapons and today's means of delivery, one expects to penetrate an enemy homeland without first collapsing his military force. What nuclear weapons have done, or appear to do, is to promote this kind of warfare to first place. Nuclear weapons threaten to make war less military, and are responsible for the lowered status of "military victory" at the present time. *Victory is no longer a prerequisite for hurting the enemy*. And it is no assurance against being terribly hurt. One need not wait until he has won the war before inflicting "unendurable" damages on his enemy. One need not wait until he has lost the war. There was a time when the assurance of victory—false or genuine assurance—could make national leaders not just willing but sometimes enthusiastic about war. Not now.

Not only *can* nuclear weapons hurt the enemy before the war has been won, and perhaps hurt decisively enough to make the military engagement academic, but it is widely assumed that in a major war that is *all* they can do. Major war is often discussed as though it would be only a contest in national destruction. If this is indeed the case—if the destruction of cities and their populations has become, with nuclear weapons, the primary object in an all-out war—the sequence of war has been reversed. Instead of destroying enemy forces as a prelude to imposing one's will on the enemy nation, one would have to destroy the nation as a means or a prelude to destroying the enemy forces. If one cannot disable enemy forces without virtually destroying the country, the victor does not even have the option of sparing the conquered nation. He has already destroyed it. Even with blockade and strategic bombing it could be supposed that a country would be defeated before it was destroyed, or would elect surrender before annihilation had gone far. In the Civil War it could be hoped that the South would become too weak to fight before it became too weak to survive. For "all-out" war, nuclear weapons threaten to reverse this sequence.

So nuclear weapons do make a difference, marking an epoch in warfare. The difference is not just in the amount of destruction that can be accomplished but in the role of destruction and in the decision process. Nuclear weapons can change the speed of events, the control of events, the sequence of events, the relation of victor to vanquished,

and the relation of homeland to fighting front. Deterrence rests today on the threat of pain and extinction, not just on the threat of military defeat. We may argue about the wisdom of announcing "unconditional surrender" as an aim in the last major war, but seem to expect "unconditional destruction" as a matter of course in another one.

Something like the same destruction always *could* be done. With nuclear weapons there is an expectation that it *would* be done. It is not "overkill" that is new; the American army surely had enough 30 caliber bullets to kill everybody in the world in 1945, or if it did not it could have bought them without any strain. What is new is plain "kill"—the idea that major war might be just a contest in the killing of countries, or not even a contest but just two parallel exercises in devastation.

That is the difference nuclear weapons make. At least they *may* make that difference. They also may not. If the weapons themselves are vulnerable to attack, or the machines that carry them, a successful surprise might eliminate the opponent's means of retribution. That an enormous explosion can be packaged in a single bomb does not by itself guarantee that the victor will receive deadly punishment. Two gunfighters facing each other in a Western town had an unquestioned capacity to kill one another; that did not guarantee that both would die in a gunfight—only the slower of the two. Less deadly weapons, permitting an injured one to shoot back before he died, might have been more conducive to a restraining balance of terror, or of caution. The very efficiency of nuclear weapons could make them ideal for starting war, if they can suddenly eliminate the enemy's capability to shoot back.

And there is a contrary possibility: that nuclear weapons are not vulnerable to attack and prove not to be terribly effective against each other, posing no need to shoot them quickly for fear they will be destroyed before they are launched, and with no task available but the systematic destruction of the enemy country and no necessary reason to do it fast rather than slowly. Imagine that nuclear destruction *had* to go slowly—that the bombs could be dropped only one per day. The prospect would look very different, something like the most terroristic guerilla warfare on a massive scale. It happens that nuclear war does not have to go slowly; but it may also not have to go speedily. The mere existence of nuclear weapons does not itself determine that everything must go off in a blinding flash, any more than that it must go slowly. Nuclear weapons do not simplify things quite that much.

In recent years there has been a new emphasis on distinguishing what nuclear weapons make possible and what they make inevitable in case of war. The American government began in 1961 to emphasize that even a major nuclear war might not, and need not, be a simple contest in destructive fury. Secretary McNamara gave a controversial speech in June 1962 on the idea that "deterrence" might operate even in war itself, that belligerents might, out of self-interest, attempt to limit the war's destructiveness. Each might feel the sheer destruction of enemy people and cities would serve no decisive military purpose but that a continued *threat* to destroy them might serve a purpose. The continued threat would depend on their not being destroyed yet. Each might reciprocate the other's restraint, as in limited wars of lesser scope. Even the worst of enemies, in the interest of reciprocity, have often not mutilated prisoners of war; and citizens might deserve comparable treatment. The fury of nuclear attacks might fall mainly on each other's weapons and military forces.

"The United States has come to the conclusion," said Secretary McNamara,

> that to the extent feasible, basic military strategy in a possible general war should be approached in much the same way that more conventional military operations have been regarded in the past. That is to say, principal military objectives . . . should be the destruction of the enemy's military forces, not of his civilian population . . . giving the possible opponent the strongest imaginable incentive to refrain from striking our own cities.[11]

This is a sensible way to think about war, if one has to think about it and of course one does. But whether the Secretary's "new strategy" was sensible or not, whether enemy populations should be held hostage or instantly destroyed, whether the primary targets should be military forces or just people and their source of livelihood, this is not "much the same way that more conventional military operations have been regarded in the past." This is utterly different, and the difference deserves emphasis.

In World Wars I and II one went to work on enemy military forces, not his people, because until the enemy's military forces had been taken care of there was typically not anything decisive that one could do to the enemy nation itself. The Germans did not, in World War I, refrain from bayoneting French citizens by the millions in the hope that the Allies would abstain from shooting up the German population. They could not get at the French citizens until they had breached the Allied lines. Hitler tried to terrorize London and did not make it. The Allied air forces took the war straight to Hitler's territory, with at least some thought of doing in Germany what Sherman recognized he was doing in Georgia; but with the bombing technology of World War II one could not afford to bypass the troops and go exclusively for enemy populations—not, anyway, in Germany. With nuclear weapons one has that alternative.

To concentrate on the enemy's military installations while deliberately holding in reserve a massive capacity for destroying his cities, for exterminating his people and eliminating his society, on condition that the enemy observe similar restraint with respect to one's own society, is not the "conventional approach." In World Wars I and II the first order of business was to destroy enemy armed forces because that was the only promising way to make him surrender. To fight a purely military engagement "all-out" while holding in reserve a decisive capacity for violence, on condition the enemy do likewise, is not the way military operations have traditionally been approached. Secretary McNamara was proposing a new approach to warfare in a new era, an era in which the power to hurt is more impressive than the power to oppose.

From battlefield warfare to the diplomacy of violence

Almost one hundred years before Secretary McNamara's speech, the Declaration of St. Petersburg (the first of the great modern conferences to cope with the evils of warfare) in 1868 asserted, "The only legitimate object which states should endeavor to accomplish during war is to weaken the military forces of the enemy." And in a letter to the League of Nations in 1920, the President of the International Committee of the Red Cross wrote; "The Committee considers it very desirable that war should resume its former character,

that is to say, that it should be a struggle between armies and not between populations. The civilian population must, as far as possible, remain outside the struggle and its consequences."[12] His language is remarkably similar to Secretary McNamara's.

The International Committee was fated for disappointment, like everyone who labored in the late nineteenth century to devise rules that would make war more humane. When the Red Cross was founded in 1863, it was concerned about the disregard for noncombatants by those who made war; but in the Second World War noncombatants were deliberately chosen as targets by both Axis and Allied forces, not decisively but nevertheless deliberately. The trend has been the reverse of what the International Committee hoped for.

In the present era noncombatants appear to be not only deliberate targets but primary targets, or at least were so taken for granted until about the time of Secretary McNamara's speech. In fact, noncombatants appeared to be primary targets at both ends of the scale of warfare; thermonuclear war threatened to be a contest in the destruction of cities and populations; and, at the other end of the scale, insurgency is almost entirely terroristic. We live in an era of dirty war.

Why is this so? Is war properly a military affair among combatants, and is it a depravity peculiar to the twentieth century that we cannot keep it within decent bounds? Or is war inherently dirty, and was the Red Cross nostalgic for an artificial civilization in which war had become encrusted with etiquette—a situation to be welcomed but not expected?

To answer this question it is useful to distinguish three stages in the involvement of noncombatants—of plain people and their possessions—in the fury of war. These stages are worth distinguishing; but their sequence is merely descriptive of Western Europe during the past three hundred years, not a historical generalization. The first stage is that in which the people may get hurt by inconsiderate combatants. This is the status that people had during the period of "civilized warfare" that the International Committee had in mind.

From about 1648 to the Napoleonic era, war in much of Western Europe was something superimposed on society. It was a contest engaged in by monarchies for stakes that were measured in territories and, occasionally, money or dynastic claims. The troops were mostly mercenaries and the motivation for war was confined to the aristocratic elite. Monarchs fought for bits of territory, but the residents of disputed terrain were more concerned with protecting their crops and their daughters from marauding troops than with whom they owed allegiance to. They were, as Quincy Wright remarked in his classic *Study of War*, little concerned that the territory in which they lived had a new sovereign.[13] Furthermore, as far as the King of Prussia and the Emperor of Austria were concerned, the loyalty and enthusiasm of the Bohemian farmer were not decisive considerations. It is an exaggeration to refer to European war during this period as a sport of kings, but not a gross exaggeration. And the military logistics of those days confined military operations to a scale that did not require the enthusiasm of a multitude.

Hurting people was not a decisive instrument of warfare. Hurting people or destroying property only reduced the value of the things that were being fought over, to the disadvantage of both sides. Furthermore, the monarchs who conducted wars often did not want to discredit the social institutions they shared with their enemies. Bypassing an

enemy monarch and taking the war straight to his people would have had revolutionary implications. Destroying the opposing monarchy was often not in the interest of either side; opposing sovereigns had much more in common with each other than with their own subjects, and to discredit the claims of a monarchy might have produced a disastrous backlash. It is not surprising—or, if it is surprising, not altogether astonishing—that on the European continent in that particular era war was fairly well confined to military activity.

One could still, in those days and in that part of the world, be concerned for the rights of noncombatants and hope to devise rules that both sides in the war might observe. The rules might well be observed because both sides had something to gain from preserving social order and not destroying the enemy. Rules might be a nuisance, but if they restricted both sides the disadvantages might cancel out.

This was changed during the Napoleonic wars. In Napoleon's France, people cared about the outcome. The nation was mobilized. The war was a national effort, not just an activity of the elite. It was both political and military genius on the part of Napoleon and his ministers that an entire nation could be mobilized for war. Propaganda became a tool of warfare, and war became vulgarized.

Many writers deplored this popularization of war, this involvement of the democratic masses. In fact, the horrors we attribute to thermonuclear war were already foreseen by many commentators, some before the First World War and more after it; but the new "weapon" to which these terrors were ascribed was people, millions of people, passionately engaged in national wars, spending themselves in a quest for total victory and desperate to avoid total defeat. Today we are impressed that a small number of highly trained pilots can carry enough energy to blast and burn tens of millions of people and the buildings they live in; two or three generations ago there was concern that tens of millions of people using bayonets and barbed wire, machine guns and shrapnel, could create the same kind of destruction and disorder.

That was the second stage in the relation of people to war, the second in Europe since the middle of the seventeenth century. In the first stage people had been neutral but their welfare might be disregarded; in the second stage people were involved because it was *their* war. Some fought, some produced materials of war, some produced food, and some took care of children; but they were all part of a war-making nation. When Hitler attacked Poland in 1939, the Poles had reason to care about the outcome. When Churchill said the British would fight on the beaches, he spoke for the British and not for a mercenary army. The war was about something that mattered. If people would rather fight a dirty war than lose a clean one, the war will be between nations and not just between governments. If people have an influence on whether the war is continued or on the terms of a truce, making the war hurt people serves a purpose. It is a dirty purpose, but war itself is often about something dirty. The Poles and the Norwegians, the Russians and the British, had reason to believe that if they lost the war the consequences would be dirty. This is so evident in modern civil wars—civil wars that involve popular feelings—that we expect them to be bloody and violent. To hope that they would be fought cleanly with no violence to people would be a little like hoping for a clean race riot.

There is another way to put it that helps to bring out the sequence of events. If a modern war were a clean one, the violence would not be ruled out but merely saved for

the postwar period. Once the army has been defeated in the clean war, the victorious enemy can be as brutally coercive as he wishes. A clean war would determine which side gets to use its power to hurt coercively after victory, and it is likely to be worth some violence to avoid being the loser.

"Surrender" is the process following military hostilities in which the power to hurt is brought to bear. If surrender negotiations are successful and not followed by overt violence, it is because the capacity to inflict pain and damage was successfully used in the bargaining process. On the losing side, prospective pain and damage were averted by concessions; on the winning side, the capacity for inflicting further harm was traded for concessions. The same is true in a successful kidnapping. It only reminds us that the purpose of pure pain and damage is extortion; it is *latent* violence that can be used to advantage. A well-behaved occupied country is not one in which violence plays no part; it may be one in which latent violence is used so skillfully that it need not be spent in punishment.

This brings us to the third stage in the relation of civilian violence to warfare. If the pain and damage can be inflicted during war itself, they need not wait for the surrender negotiation that succeeds a military decision. If one can coerce people and their governments while war is going on, one does not need to wait until he has achieved victory or risk losing that coercive power by spending it all in a losing war. General Sherman's march through Georgia might have made as much sense, possibly more, had the North been losing the war, just as the German buzz bombs and V-2 rockets can be thought of as coercive instruments to get the war stopped before suffering military defeat.

In the present era, since at least the major East–West powers are capable of massive civilian violence during war itself beyond anything available during the Second World War, the occasion for restraint does not await the achievement of military victory or truce. The principal restraint during the Second World War was a temporal boundary, the date of surrender. In the present era we find the violence dramatically restrained during war itself. The Korean War was furiously "all-out" in the fighting, not only on the peninsular battlefield but in the resources used by both sides. It was "all-out," though, only within some dramatic restraints: no nuclear weapons, no Russians, no Chinese territory, no Japanese territory, no bombing of ships at sea or even airfields on the United Nations side of the line. It was a contest in military strength circumscribed by the threat of unprecedented civilian violence. Korea may or may not be a good model for speculation on limited war in the age of nuclear violence, but it was dramatic evidence that the capacity for violence can be consciously restrained even under the provocation of a war that measures its military dead in tens of thousands and that fully preoccupies two of the largest countries in the world.

A consequence of this third stage is that "victory" inadequately expresses what a nation wants from its military forces. Mostly it wants, in these times, the influence that resides in latent force. It wants the bargaining power that comes from its capacity to hurt, not just the direct consequence of successful military action. Even total victory over an enemy provides at best an opportunity for unopposed violence against the enemy population. How to use that opportunity in the national interest, or in some wider interest, can be just as important as the achievement of victory itself; but traditional military science does not tell us how to use that capacity for inflicting pain. And if a

nation, victor or potential loser, is going to use its capacity for pure violence to influence the enemy, there may be no need to await the achievement of total victory.

Actually, this third stage can be analyzed into two quite different variants. In one, sheer pain and damage are primary instruments of coercive warfare and may actually be applied, to intimidate or to deter. In the other, pain and destruction *in* war are expected to serve little or no purpose but *prior threats* of sheer violence, even of automatic and uncontrolled violence, are coupled to military force. The difference is in the all-or-none character of deterrence and intimidation. Two acute dilemmas arise. One is the choice of making prospective violence as frightening as possible or hedging with some capacity for reciprocated restraint. The other is the choice of making retaliation as automatic as possible or keeping deliberate control over the fateful decisions. The choices are determined partly by governments, partly by technology. Both variants are characterized by the coercive role of pain and destruction—of threatened (not inflicted) pain and destruction. But in one the threat either succeeds or fails altogether, and any ensuing violence is gratuitous; in the other, progressive pain and damage may actually be used to threaten more. The present era, for countries possessing nuclear weapons, is a complex and uncertain blend of the two.

Coercive diplomacy, based on the power to hurt, was important even in those periods of history when military force was essentially the power to take and to hold, to fend off attack and to expel invaders, and to possess territory against opposition—that is, in the era in which military force tended to pit itself against opposing force. Even then, a critical question was how much cost and pain the other side would incur for the disputed territory. The judgment that the Mexicans would concede Texas, New Mexico, and California once Mexico City was a hostage in our hands was a diplomatic judgment, not a military one. If one could not readily take the particular territory he wanted or hold it against attack, he could take something else and trade it.[14] Judging what the enemy leaders would trade—be it a capital city or national survival—was a critical part of strategy even in the past. Now we are in an era in which the power to hurt—to inflict pain and shock and privation on a country itself, not just on its military forces—is commensurate with the power to take and to hold, perhaps more than commensurate, perhaps decisive, and it is even more necessary to think of warfare as a process of violent bargaining. This is not the first era in which live captives have been worth more than dead enemies, and the power to hurt has been a bargaining advantage; but it is the first in American experience when that kind of power has been a dominant part of military relations.

The power to hurt is nothing new in warfare, but for the United States modern technology has drastically enhanced the strategic importance of pure, unconstructive, unacquisitive pain and damage, whether used against us or in our own defense. This in turn enhances the importance of war and threats of war as techniques of influence, not of destruction; of coercion and deterrence, not of conquest and defense; of bargaining and intimidation.

Quincy Wright, in his *Study of War*, devoted a few pages (319–20) to the "nuisance value" of war, using the analogy of a bank robber with a bomb in his hand that would destroy bank and robber. Nuisance value made the threat of war, according to Wright, "an aid to the diplomacy of unscrupulous governments." Now we need a stronger term,

and more pages, to do the subject justice, and need to recognize that even scrupulous governments often have little else to rely on militarily. It is extraordinary how many treatises on war and strategy have declined to recognize that the power to hurt has been, throughout history, a fundamental character of military force and fundamental to the diplomacy based on it.

War no longer looks like just a contest of strength. War and the brink of war are more a contest of nerve and risk-taking, of pain and endurance. Small wars embody the threat of a larger war; they are not just military engagements but "crisis diplomacy." The threat of war has always been somewhere underneath international diplomacy, but for Americans it is now much nearer the surface. Like the threat of a strike in industrial relations, the threat of divorce in a family dispute, or the threat of bolting the party at a political convention, the threat of violence continuously circumscribes international politics. Neither strength nor goodwill procures immunity.

Military strategy can no longer be thought of, as it could for some countries in some eras, as the science of military victory. It is now equally, if not more, the art of coercion, of intimidation and deterrence. The instruments of war are more punitive than acquisitive. Military strategy, whether we like it or not, has become the diplomacy of violence.

Notes

1 Lynn Montross, *War Through the Ages* (3d ed. New York, Harper and Brothers, 1960), p. 146.
2 Otis A. Singletary, *The Mexican War* (Chicago, University of Chicago Press, 1960), pp. 75–76. In a similar episode the Gauls, defending the town of Alesia in 52 B.C., "decided to send out of the town those whom age or infirmity incapacitated for fighting . . . . They came up to the Roman fortifications and with tears besought the soldiers to take them as slaves and relieve their hunger. But Caesar posted guards on the ramparts with orders to refuse them admission." Caesar, *The Conquest of Gaul*, S.A. Handford, transl. (Baltimore, Penguin Books, 1951), p. 227.
3 Herodotus, *The Histories*, Aubrey de Selincourt, transl. (Baltimore, Penguin Books, 1954), p. 362.
4 Xenophon, *The Persian Expedition*, Rex Warner, transl. (Baltimore, Penguin Books, 1949), p. 272. "The 'rational' goal of the threat of violence," says H. L. Nieburg, "is an accommodation of interests, not the provocation of actual violence. Similarly the 'rational' goal of actual violence is demonstration of the will and capability of action, establishing a measure of the credibility of future threats, not the exhaustion of that capability in unlimited conflict." "Uses of Violence," *Journal of Conflict Resolution*, *7* (1963), 44.
5 A perceptive, thoughtful account of this tactic, and one that emphasizes its "diplomatic" character, is in the lecture of Air Chief Marshal Lord Portal, "Air Force Cooperation in Policing the Empire." "The law-breaking tribe must be given an alternative to being bombed and . . . be told in the clearest possible terms what that alternative is." And, "It would be the greatest mistake to believe that a victory which spares the lives and feelings of the losers need be any less permanent or salutary than one which inflicts heavy losses on the fighting men and results in a 'peace' dictated on a stricken field." *Journal of the Royal United Services Institution* (London, May 1937), pp. 343–58.
6 Paul I. Wellman, *Death on the Prairie* (New York, Macmillan, 1934), p. 82.
7 J.F.C. Fuller reproduces some of this correspondence and remarks, "For the nineteenth century this was a new conception, because it meant that the deciding factor in the war—the power to sue for peace—was transferred from government to people, and that peace-making was a product of revolution. This was to carry the principle of democracy to its ultimate stage . . . ." *The Conduct of War: 1789–1961* (New Brunswick, Rutgers University Press, 1961), pp. 107–12.
8 For a reexamination of strategic-bombing theory before and during World War II, in the light of nuclear-age concepts, see George H. Quester, *Deterrence before Hiroshima* (New York, John Wiley and Sons, 1966). See also the first four chapters of Bernard Brodie, *Strategy in the Missile Age* (Princeton, Princeton University Press, 1959), pp. 3–146.
9 New York, Simon and Schuster, 1962, p. 47.

10 Winston Churchill is often credited with the term, "balance of terror," and the following quotation succinctly expresses the familiar notion of nuclear mutual deterrence. This, though, is from a speech in Commons in November 1934. "The fact remains that when all is said and done as regards defensive methods, pending some new discovery the only direct measure of defense upon a great scale is the certainty of being able to inflict simultaneously upon the enemy as great damage as he can inflict upon ourselves. Do not let us undervalue the efficacy of this procedure. It may well prove in practice—I admit I cannot prove it in theory—capable of giving complete immunity. If two Powers show themselves equally capable of inflicting damage upon each other by some particular process of war, so that neither gains an advantage from its adoption and both suffer the most hideous reciprocal injuries, it is not only possible but it seems probable that neither will employ that means." A fascinating reexamination of concepts like deterrence, preemptive attack, counterforce and countercity warfare, retaliation, reprisal, and limited war, in the strategic literature of the air age from the turn of the century to the close of World War II, is in Quester's book, cited above.

11 Commencement Address, University of Michigan, June 16, 1962.

12 International Committee of the Red Cross, *Draft Rules for the Limitation of the Dangers Incurred by the Civilian Population in Time of War* (2nd ed. Geneva, 1958), pp. 144, 151.

13 Chicago, University of Chicago Press, 1942, p. 296.

14 Children, for example. The Athenian tyrant, Hippias, was besieged in the Acropolis by an army of Athenian exiles aided by Spartans; his position was strong and he had ample supplies of food and drink, and "but for an unexpected accident" says Herodotus, the besiegers would have persevered a while and then retired. But the children of the besieged were caught as they were being taken out of the country for their safety. "This disaster upset all their plans; in order to recover the children, they were forced to accept . . . terms, and agreed to leave Attica within five days." Herodotus, *The Histories*, p. 334. If children can be killed at long distance, by German buzz bombs or nuclear weapons, they do not need to be caught first. And if both can hurt each other's children the bargaining is more complex.

This page intentionally left blank

Part III

Instruments of war, intelligence and deception

Introduction

The essays in Parts I and II discussed the nature and foundations of strategic thought; the essays in Part III examine the problem of theorizing about war in specific operational environments, and it introduces the problems of intelligence and deception.

The first readings are selections from *Some Principles of Maritime Strategy* (1911), the seminal work of the celebrated British naval historian and thinker Julian S. Corbett (1854–1922). Many contemporary security specialists and strategic theorists regard Corbett's work as a model of how to think about the strategy of waging limited wars in the post-9/11 world. In his day, Corbett rejected the idea that naval strategy was ultimately about fighting one big battle to destroy the opponent's fleet. According to Corbett, history had shown that it was not always possible or necessary to win a fleet action to achieve one's objectives at sea. The whole point of attaining "command of the sea", he argued, was to employ maritime strength in all its forms to influence outcomes on land. In the chapter reproduced here, Corbett, drawing primarily on Clausewitz, analyses the distinctions between offensive and defensive war, and limited and unlimited war. He argues that continental thinking about "limited war" is especially appropriate to maritime warfare, where large distances and great waters separate the combatants, so providing an effective check on the strength that each could mobilize against the other. By commanding the sea, Corbett maintained, the British could make as much or as little war as they liked, bringing to bear a decisive amount of strength at the decisive point; this was the island nation's great advantage over its continental rivals.

The next selection is about the application of air power. The capitulation of Serbian President Slobodan Milosevic on 9 June 1999 after a 78-day NATO bombing campaign rekindled a debate that dates back to the 1920s about whether wars could be won from the application of "strategic air power" alone. In an essay that examines the realities of coercion in international politics, Daniel L. Byman and Matthew C. Waxman, both employees of RAND at the time of publication, argue that the idea that air power alone won the Kosovo War is fundamentally flawed. Those who argued otherwise skewed the debate to overstate the effects of bombing. The NATO bombing campaign was one important coercive tool in a dynamic competition between the alliance and the Serbian leadership. To the extent that we can know, Milosevic's concerns over the stability of his regime, the threat of a ground invasion and his inability to hit back played

the "largest" roles in his capitulation. "Air power played a critical role in all three of these," Byman and Waxman argue, "but in none of them did air power truly operate in isolation from other coercive instruments or pressures." It is worth taking a moment to reflect on their conclusion and applying it more generally. The application of force alone in any one element is very unlikely to be decisive, and even the application of force in multiple dimensions cannot be isolated from other political and diplomatic concerns or pressures.

How to anticipate and therefore prevent surprises such as the Japanese attack on Pearl Harbor in December 1941, the German attack on the Soviet Union in June 1941, the Yom Kippur War of October 1973 and the terrorist attacks of 11 September 2001 on the United States is a preoccupation of strategic studies. Obtaining reliable intelligence in peace and war is an obvious way to remain one step ahead of a foe's next move. However, as Robert Jervis of Columbia University tells us, even if one could completely correct for the bureaucratic distortions caused by intelligence organizations and counteract the ill-effects of politicization, there are still "severe intrinsic limits" to just how good intelligence can be. The future after all is inherently unpredictable. Echoing Clausewitz, Jervis underscores the fact that the political and military realms are interactive; one nation's behaviour will generate unintended consequences in the international system and may compel another, a rival, to act in an unpredictable way. While the periodic reform of the intelligence communities may bring about improvements in the flow of reliable intelligence to top decision makers, Jervis warns strategists to remain sceptical of any promise to provide foreknowledge of an opponent's every move.

Another reason why intelligence can never be perfect is that opponents seek to keep their secrets secret and to deceive prying eyes about their intentions and capabilities. The final essay in this section, by Joe Maiolo of King's College London, examines the strategic consequences of a long-term programme of deception in peacetime. During the 1920s and 1930s, the British Admiralty deliberately exaggerated the effectiveness of ASDIC (sonar), trumpeting it as an 'antidote' to the threat posed by the submarine to warships and mercantile shipping. The goal of this deception campaign was to discourage potential foes from investing in submarines to wage a future unrestricted campaign against Britain's oceanic trade. The deception worked because it played on a prevailing faith in the scientific and technological progress and the predilection in most navies for large surface ships rather than submersibles. This British deception campaign and a lack of reliable intelligence helps to explain why the German Navy was ill-prepared for U-boat warfare in the early years of the Second World War.

Study questions

1 What does Corbett mean by "command of the sea"?
2 What does the 1999 NATO bombing campaign tell us about the role of air power in contemporary war?
3 What unique attributes do land, sea and air forces possess?
4 What are the intrinsic limitations to good intelligence?
5 What roles can deception play in war and peace in frustrating an opponent's strategy?

Further reading

Beckley, Michael, "Economic Development and Military Effectiveness", *Journal of Strategic Studies* 33, no. 1 (2010), 43–79.

Betts, Richard K., "Analysis, War, and Decision: Why Intelligence Failures are Inevitable", *World Politics* 31, no. 1 (October 1978), 61–89.

Biddle, Tami Davis, "British and American Approaches to Strategic Bombing: Their Origins and Implementation in the World War II Combined Bomber Offensive", *Journal of Strategic Studies* 18, no. 1 (1994), 91–144.

Ferris, John, "'FORTITUDE' in Context: The Evolution of British Military Deception in Two World Wars, 1914–1945", in Richard K. Betts and Thomas G. Mahnken (eds) *Paradoxes of Strategic Intelligence: Essays in Honor of Michael I. Handel* (London: Frank Cass, 2003), 117–165.

Frieser, Karl-Heinz, *The Blitzkrieg Legend: The 1940 Campaign in the West* (Maryland: Naval Institute Press, 2005).

Harris, J.P., "The Myth of Blitzkrieg", *War in History* 2, no. 3 (1995), 335–352.

Jervis, Robert, "Reports, Politics, and Intelligence Failures: The Case of Iraq", *Journal of Strategic Studies* 29, no. 1 (2006), 3–52.

Mombauer, Annika, "War Plans and War Guilt: The Debate Surrounding the Schlieffen Plan", *Journal of Strategic Studies* 28, no. 5 (2005), 857–885.

Holden Reid, Brian, "J.F.C. Fuller's Theory of Mechanized Warfare", *Journal of Strategic Studies* 1, no. 3 (1978), 295–312.

Kober, Avi "The Israel Defense Forces in the Second Lebanon War: Why the Poor Performance?", *Journal of Strategic Studies* 31, no. 1 (2008), 3–40.

Maiolo, Joseph, *Cry Havoc: How the Arms Race Drove the World to War, 1931–1941* (New York: Basic Books, 2010).

Overy, R.J., "Air Power and the Origins of Deterrence Theory Before 1939", *Journal of Strategic Studies* 15, no. 1 (1992), 73–101.

Philpott, William, "The Strategic Ideas of Sir John French", *Journal of Strategic Studies* (1989), 458–478.

Sumida, Jon, "Alfred Thayer Mahan, Geopolitician", *Journal of Strategic Studies* 22, nos 2/3 (1999), 39–62.

Till, Geoffrey, "Julian Corbett: Ten Maritime Commandments", in A. Dorman *et al.* (eds) *The Changing Face of Maritime Power* (London: Macmillan, 1999), 19–33.

Till, Geoffrey, *Seapower: A Guide for the Twenty-First Century* (London: Routledge, 2005).

Warden III, John A., *The Air Campaign* (Washington, DC: Brassey's, 1991).

This page intentionally left blank

8 Some principles of maritime strategy

Julian Corbett

Natures of wars—offensive and defensive

Having determined that wars must vary in character according to the nature and importance of their object, we are faced with the difficulty that the variations will be of infinite number and of all degrees of distinction. So complex indeed is the graduation presented that at first sight it appears scarcely possible to make it the basis of practical study. But on further examination it will be seen that by applying the usual analytical method the whole subject is susceptible of much simplification. We must in short attempt to reach some system of classification; that is, we must see if it is not possible to group the variations into some well-founded categories. With a subject so complex and intangible the grouping must of course be to some extent arbitrary, and in some places the lines of demarcation will be shadowy; but if classification has been found possible and helpful in Zoology or Botany, with the infinite and minute individual variations with which they have to deal, it should be no less possible and helpful in the study of war.

The political theory of war will at any rate give us two broad and well-marked classifications. The first is simple and well known, depending on whether the political object of the war is positive or negative. If it be positive—that is, if our aim is to wrest something from the enemy—then our war in its main lines will be offensive. If, on the other hand, our aim be negative, and we simply seek to prevent the enemy wresting some advantage to our detriment, then the war in its general direction will be defensive.

It is only as a broad conception that this classification has value. Though it fixes the general trend of our operations, it will not in itself affect their character. For a maritime Power at least it is obvious that this must be so. For in any circumstances it is impossible for such a Power either to establish its defence or develop fully its offence without securing a working control of the sea by aggressive action against the enemy's fleets. Furthermore, we have always found that however strictly our aim may be defensive, the most effective means of securing it has been by counter-attack over-sea, either to support an ally directly or to deprive our enemy of his colonial possessions. Neither category, then, excludes the use of offensive operations nor the idea of overthrowing our enemy so far as is necessary to gain our end. In neither case does the conception lead us eventually to any other objective than the enemy's armed forces, and particularly his naval forces. The only real difference is this—that if our object be positive our general plan must be offensive, and we should at least open with a true offensive movement; whereas if our

object be negative our general plan will be preventive, and we may bide our time for our counter-attack. To this extent our action must always tend to the offensive. For counter-attack is the soul of defence. Defence is not a passive attitude, for that is the negation of war. Rightly conceived, it is an attitude of alert expectation. We wait for the moment when the enemy shall expose himself to a counterstroke, the success of which will so far cripple him as to render us relatively strong enough to pass to the offensive ourselves.

From these considerations it will appear that, real and logical as the classification is, to give it the designation "offensive and defensive" is objectionable from every point of view. To begin with, it does not emphasise what the real and logical distinction is. It suggests that the basis of the classification is not so much a difference of object as a differ-ence in the means employed to achieve the object. Consequently we find ourselves continually struggling with the false assumption that positive war means using attack, and negative war being content with defence.

That is confusing enough, but a second objection to the designation is far more serious and more fertile of error. For the classification "offensive and defensive" implies that offensive and defensive are mutually exclusive ideas, whereas the truth is, and it is a fundamental truth of war, that they are mutually complementary. All war and every form of it must be both offensive and defensive. No matter how clear our positive aim nor how high our offensive spirit, we cannot develop an aggressive line of strategy to the full without the support of the defensive on all but the main lines of operation. In tactics it is the same. The most convinced devotee of attack admits the spade as well as the rifle. And even when it comes to men and material, we know that without a certain amount of protection neither ships, guns, nor men can develop their utmost energy and endur-ance in striking power. There is never, in fact, a clean choice between attack and defence. In aggressive operations the question always is, how far must defence enter into the methods we employ in order to enable us to do the utmost within our resources to break or paralyse the strength of the enemy. So also with defence. Even in its most legitimate use, it must always be supplemented by attack. Even behind the walls of a fortress men know that sooner or later the place must fall unless by counter-attack on the enemy's siege works or communications they can cripple his power of attack.

It would seem, therefore, that it were better to lay aside the designation "offensive and defensive" altogether and substitute the terms "positive and negative." But here again we are confronted with a difficulty. There have been many wars in which positive methods have been used all through to secure a negative end, and such wars will not sit easily in either class. For instance, in the War of Spanish Succession our object was mainly to prevent the Mediterranean becoming a French lake by the union of the French and Spanish crowns, but the method by which we succeeded in achieving our end was to seize the naval positions of Gibraltar and Minorca, and so in practice our method was positive. Again, in the late Russo-Japanese War the main object of Japan was to prevent Korea being absorbed by Russia. That aim was preventive and negative. But the only effective way of securing her aim was to take Korea herself, and so for her the war was in practice positive.

On the other hand, we cannot shut our eyes to the fact that in the majority of wars the side with the positive object has acted generally on the offensive and the other generally on the defensive. Unpractical therefore as the distinction seems to be, it is impossible to

dismiss it without inquiring why this was so, and it is in this inquiry that the practical results of the classification will be found to lie—that is, it forces us to analyse the comparative advantages of offence and defence. A clear apprehension of their relative possibilities is the corner stone of strategical study.

Now the advantages of the offensive are patent and admitted. It is only the offensive that can produce positive results, while the strength and energy which are born of the moral stimulation of attack are of a practical value that outweighs almost every other consideration. Every man of spirit would desire to use the offensive whether his object were positive or negative, and yet there are a number of cases in which some of the most energetic masters of war have chosen the defensive, and chosen with success. They have chosen it when they have found themselves inferior in physical force to their enemy, and when they believed that no amount of aggressive spirit could redress that inferiority.

Obviously, then, for all the inferiority of the defensive as a drastic form of war it must have some inherent advantage which the offensive does not enjoy. In war we adopt every method for which we have sufficient strength. If, then, we adopt the less desirable method of defence, it must be either that we have not sufficient strength for offence, or that the defence gives us some special strength for the attainment of our object.

What, then, are these elements of strength? It is very necessary to inquire, not only that we may know that if for a time we are forced back upon the defensive all is not lost, but also that we may judge with how much daring we should push our offensive to prevent the enemy securing the advantages of defence.

As a general principle we all know that possession is nine points of the law. It is easier to keep money in our pocket than to take it from another man's. If one man would rob another he must be the stronger or better armed unless he can do it by dexterity or stealth, and there lies one of the advantages of offence. The side which takes the initiative has usually the better chance of securing advantage by dexterity or stealth. But it is not always so. If either by land or sea we can take a defensive position so good that it cannot be turned and must be broken down before our enemy can reach his objective, then the advantage of dexterity and stealth passes to us. We choose our own ground for the trial of strength. We are hidden on familiar ground; he is exposed on ground that is less familiar. We can lay traps and prepare surprises by counter-attack, when he is most dangerously exposed. Hence the paradoxical doctrine that where defence is sound and well designed the advantage of surprise is against the attack.

It will be seen therefore that whatever advantages lie in defence they depend on the preservation of the offensive spirit. Its essence is the counter-attack—waiting deliberately for a chance to strike—not cowering in inactivity. Defence is a condition of restrained activity—not a mere condition of rest. Its real weakness is that if unduly prolonged it tends to deaden the spirit of offence. This is a truth so vital that some authorities in their eagerness to enforce it have travestied it into the misleading maxim, "That attack is the best defence." Hence again an amateurish notion that defence is always stupid or pusillanimous, leading always to defeat, and that what is called "the military spirit" means nothing but taking the offensive. Nothing is further from the teaching or the practice of the best masters. Like Wellington at Torres Vedras, they all at times used the defensive till the elements of strength inherent in that form of war, as opposed to the exhausting strain inherent in the form that they had fixed upon their

opponents, lifted them to a position where they in their turn were relatively strong enough to use the more exhausting form.

The confusion of thought which has led to the misconceptions about defence as a method of war is due to several obvious causes. Counter-attacks from a general defensive attitude have been regarded as a true offensive, as, for instance, in Frederick the Great's best-known operations, or in Admiral Tegethoff's brilliant counterstroke at Lissa, or our own operations against the Spanish Armada. Again, the defensive has acquired an ill name by its being confused with a wrongly arrested offensive, where the superior Power with the positive object lacked the spirit to use his material superiority with sufficient activity and perseverance. Against such a Power an inferior enemy can always redress his inferiority by passing to a bold and quick offensive, thus acquiring a momentum both moral and physical which more than compensates his lack of weight. The defensive has also failed by the choice of a bad position which the enemy was able to turn or avoid. A defensive attitude is nothing at all, its elements of strength entirely disappear, unless it is such that the enemy must break it down by force before he can reach his ultimate objective. Even more often has it failed when the belligerent adopting it, finding he has no available defensive position which will bar the enemy's progress, attempts to guard every possible line of attack. The result is of course that by attenuating his force he only accentuates his inferiority.

Clear and well proven as these considerations are for land warfare, their application to the sea is not so obvious. It will be objected that at sea there is no defensive. This is generally true for tactics, but even so not universally true. Defensive tactical positions are possible at sea, as in defended anchorages. These were always a reality, and the mine has increased their possibilities. In the latest developments of naval warfare we have seen the Japanese at the Elliot Islands preparing a real defensive position to cover the landing of their Second Army in the Liaotung Peninsula. Strategically the proposition is not true at all. A strategical defensive has been quite as common at sea as on land, and our own gravest problems have often been how to break down such an attitude when our enemy assumed it. It usually meant that the enemy remained in his own waters and near his own bases, where it was almost impossible for us to attack him with decisive result, and whence he always threatened us with counter-attack at moments of exhaustion, as the Dutch did at Sole Bay and in the Medway. The difficulty of dealing decisively with an enemy who adopted this course was realised by our service very early, and from first to last one of our chief preoccupations was to prevent the enemy availing himself of this device and to force him to fight in the open, or at least to get between him and his base and force an action there.

Probably the most remarkable manifestation of the advantages that may be derived in suitable conditions from a strategical defensive is also to be found in the late Russo-Japanese War. In the final crisis of the naval struggle the Japanese fleet was able to take advantage of a defensive attitude in its own waters which the Russian Baltic fleet would have to break down to attain its end, and the result was the most decisive naval victory ever recorded.

The deterrent power of active and dexterous operations from such a position was well known to our old tradition. The device was used several times, particularly in our home waters, to prevent a fleet, which for the time we were locally too weak to destroy, from

carrying out the work assigned to it. A typical position of the kind was off Scilly, and it was proved again and again that even a superior fleet could not hope to effect anything in the Channel till the fleet off Scilly had been brought to decisive action. But the essence of the device was the preservation of the aggressive spirit in its most daring form. For success it depended on at least the will to seize every occasion for bold and harassing counter-attacks such as Drake and his colleagues struck at the Armada.

To submit to blockade in order to engage the attention of a superior enemy's fleet is another form of defensive, but one that is almost wholly evil. For a short time it may do good by permitting offensive operations elsewhere which otherwise would be impossible. But if prolonged, it will sooner or later destroy the spirit of your force and render it incapable of effective aggression.

The conclusion then is that although for the practical purpose of framing or appreciating plans of war the classification of wars into offensive and defensive is of little use, a clear apprehension of the inherent relative advantages of offence and defence is essential. We must realise that in certain cases, provided always we preserve the aggressive spirit, the defensive will enable an inferior force to achieve points when the offensive would probably lead to its destruction. But the elements of strength depend entirely on the will and insight to deal rapid blows in the enemy's unguarded moments. So soon as the defensive ceases to be regarded as a means of fostering power to strike and of reducing the enemy's power of attack, it loses all its strength. It ceases to be even a suspended activity, and anything that is not activity is not war.

With these general indications of the relative advantages of offence and defence we may leave the subject for the present. It is possible of course to catalogue the advantages and disadvantages of each form, but any such bald statement—without concrete examples to explain the meaning—must always appear controversial and is apt to mislead. It is better to reserve their fuller consideration till we come to deal with strategical operations and are able to note their actual effect upon the conduct of war in its various forms. Leaving therefore our first classification of wars into offensive and defensive we will pass on to the second, which is the only one of real practical importance.

Natures of wars—limited and unlimited

The second classification to which we are led by the political theory of war, is one which Clausewitz was the first to formulate and one to which he came to attach the highest importance. It becomes necessary therefore to examine his views in some detail—not because there is any need to regard a continental soldier, however distinguished, as an indispensable authority for a maritime nation. The reason is quite the reverse. It is because a careful examination of his doctrine on this point will lay open what are the radical and essential differences between the German or Continental School of Strategy and the British or Maritime School—that is, our own traditional School, which too many writers both at home and abroad quietly assume to have no existence. The evil tendency of that assumption cannot be too strongly emphasised, and the main purpose of this and the following chapters will be to show how and why even the greatest of the continental strategists fell short of realising fully the characteristic conception of the British tradition.

By the classification in question Clausewitz distinguished wars into those with a "Limited" object and those whose object was "Unlimited." Such a classification was entirely characteristic of him, for it rested not alone upon the material nature of the object, but on certain moral considerations to which he was the first to attach their real value in war. Other writers such as Jomini had attempted to classify wars by the special purpose for which they were fought, but Clausewitz's long course of study convinced him that such a distinction was unphilosophical and bore no just relation to any tenable theory of war. Whether, that is, a war was positive or negative mattered much, but its special purpose, whether, for instance, according to Jomini's system, it was a war "to assert rights" or "to assist an ally" or "to acquire territory," mattered not at all.

Whatever the object, the vital and paramount question was the intensity with which the spirit of the nation was absorbed in its attainment. The real point to determine in approaching any war plan was what did the object mean to the two belligerents, what sacrifices would they make for it, what risks were they prepared to run? It was thus he stated his view. "The smaller the sacrifice we demand from our opponent, the smaller presumably will be the means of resistance he will employ, and the smaller his means, the smaller will ours be required to be. Similarly the smaller our political object, the less value shall we set upon it and the more easily we shall be induced to abandon it." Thus the political object of the war, its original motive, will not only determine for both belligerents reciprocally the aim of the force they use, but it will also be the standard of the intensity of the efforts they will make. So he concludes there may be wars of all degrees of importance and energy from a war of extermination down to the use of an army of observation. So also in the naval sphere there may be a life and death struggle for maritime supremacy or hostilities which never rise beyond a blockade.

Such a view of the subject was of course a wide departure from the theory of "Absolute War" on which Clausewitz had started working. Under that theory "Absolute War" was the ideal form to which all war ought to attain, and those which fell short of it were imperfect wars cramped by a lack of true military spirit. But so soon as he had seized the fact that in actual life the moral factor always must override the purely military factor, he saw that he had been working on too narrow a basis—a basis that was purely theoretical in that it ignored the human factor. He began to perceive that it was logically unsound to assume as the foundation of a strategical system that there was one pattern to which all wars ought to conform. In the light of his full and final apprehension of the value of the human factor he saw wars falling into two well-marked categories, each of which would legitimately be approached in a radically different manner, and not necessarily on the lines of "Absolute War."

He saw that there was one class of war where the political object was of so vital an importance to both belligerents that they would tend to fight to the utmost limit of their endurance to secure it. But there was another class where the object was of less importance, that is to say, where its value to one or both the belligerents was not so great as to be worth unlimited sacrifices of blood and treasure. It was these two kinds of war he designated provisionally "Unlimited" and "Limited," by which he meant not that you were not to exert the force employed with all the vigour you could develop, but that there might be a limit beyond which it would be bad policy to spend that vigour, a point

at which, long before your force was exhausted or even fully developed, it would be wiser to abandon your object rather than to spend more upon it.

This distinction it is very necessary to grasp quite clearly, for it is often superficially confused with the distinction already referred to, which Clausewitz drew in the earlier part of his work—that is, the distinction between what he called the character of modern war and the character of the wars which preceded the Napoleonic era. It will be remembered he insisted that the wars of his own time had been wars between armed nations with a tendency to throw the whole weight of the nation into the fighting line, whereas in the seventeenth and eighteenth centuries wars were waged by standing armies and not by the whole nation in arms. The distinction of course is real and of far-reaching consequences, but it has no relation to the distinction between "Limited" and "Unlimited" war. War may be waged on the Napoleonic system either for a limited or an unlimited object.

A modern instance will serve to clear the field. The recent Russo-Japanese War was fought for a limited object—the assertion of certain claims over territory which formed no part of the possessions of either belligerent. Hostilities were conducted on entirely modern lines by two armed nations and not by standing armies alone. But in the case of one belligerent her interest in the object was so limited as to cause her to abandon it long before her whole force as an armed nation was exhausted or even put forth. The expense of life and treasure which the struggle was involving was beyond what the object was worth.

This second distinction—that is, between Limited and Unlimited wars—Clausewitz regarded as of greater importance than his previous one founded on the negative or positive nature of the object. He was long in reaching it. His great work *On War* as he left it proceeds almost entirely on the conception of offensive or defensive as applied to the Napoleonic ideal of absolute war. The new idea came to him towards the end in the full maturity of his prolonged study, and it came to him in endeavouring to apply his strategical speculations to the practical process of framing a war plan in anticipation of a threatened breach with France. It was only in his final section *On War Plans* that he began to deal with it. By that time he had grasped the first practical result to which his theory led. He saw that the distinction between Limited and Unlimited war connoted a cardinal distinction in the methods of waging it. When the object was unlimited, and would consequently call forth your enemy's whole war power, it was evident that no firm decision of the struggle could be reached till his war power was entirely crushed. Unless you had a reasonable hope of being able to do this it was bad policy to seek your end by force—that is, you ought not to go to war. In the case of a limited object, however, the complete destruction of the enemy's armed force was beyond what was necessary. Clearly you could achieve your end if you could seize the object, and by availing yourself of the elements of strength inherent in the defensive could set up such a situation that it would cost the enemy more to turn you out than the object was worth to him.

Here then was a wide difference in the fundamental postulate of your war plan. In the case of an unlimited war your main strategical offensive must be directed against the armed forces of the enemy; in the case of a limited war, even where its object was positive, it need not be. If conditions were favourable, it would suffice to make the object itself the objective of your main strategical offensive. Clearly, then, he had reached a

theoretical distinction which modified his whole conception of strategy. No longer is there logically but one kind of war, the Absolute, and no longer is there but one legitimate objective, the enemy's armed forces. Being sound theory, it of course had an immediate practical value, for obviously it was a distinction from which the actual work of framing a war plan must take its departure.

A curious corroboration of the soundness of these views is that Jomini reached an almost identical standpoint independently and by an entirely different road. His method was severely concrete, based on the comparison of observed facts, but it brought him as surely as the abstract method of his rival to the conclusion that there were two distinct classes of object. "They are of two different kinds," he says, "one which may be called territorial or geographical . . . the other on the contrary consists exclusively in the destruction or disorganisation of the enemy's forces without concerning yourself with geographical points of any kind." It is under the first category of his first main classification "Of offensive wars to assert rights," that he deals with what Clausewitz would call "Limited Wars." Citing as an example Frederick the Great's war for the conquest of Silesia, he says, "In such a war . . . the offensive operations ought to be proportional to the end in view. The first move is naturally to occupy the provinces claimed" (not, be it noted, to direct your blow at the enemy's main force). "Afterwards," he proceeds, "you can push the offensive according to circumstances and your relative strength in order to obtain the desired cession by menacing the enemy at home." Here we have Clausewitz's whole doctrine of "Limited War"; firstly, the primary or territorial stage, in which you endeavour to occupy the geographical object, and then the secondary or coercive stage, in which you seek by exerting general pressure upon your enemy to force him to accept the adverse situation you have set up.

Such a method of making war obviously differs in a fundamental manner from that which Napoleon habitually adopted, and yet we have it presented by Jomini and Clausewitz, the two apostles of the Napoleonic method. The explanation is, of course, that both of them had seen too much not to know that Napoleon's method was only applicable when you could command a real physical or moral preponderance. Given such a preponderance, both were staunch for the use of extreme means in Napoleon's manner. It is not as something better than the higher road that they commend the lower one, but being veteran staff-officers and not mere theorists, they knew well that a belligerent must sometimes find the higher road beyond his strength, or beyond the effort which the spirit of the nation is prepared to make for the end in view, and like the practical men they were, they set themselves to study the potentialities of the lower road should hard necessity force them to travel it. They found that these potentialities in certain circumstances were great. As an example of a case where the lower form was more appropriate Jomini cites Napoleon's campaign against Russia in 1812. In his opinion it would have been better if Napoleon had been satisfied to begin on the lower method with a limited territorial object, and he attributes his failure to the abuse of a method which, however well suited to his wars in Germany, was incapable of achieving success in the conditions presented by a war with Russia.

Seeing how high was Napoleon's opinion of Jomini as a master of the science of war, it is curious how his views on the two natures of wars have been ignored in the present day. It is even more curious in the case of Clausewitz, since we know that in the

plenitude of his powers he came to regard this classification as the master-key of the subject. The explanation is that the distinction is not very clearly formulated in his first seven books, which alone he left in anything like a finished condition. It was not till he came to write his eighth book *On War Plans* that he saw the vital importance of the distinction round which he had been hovering. In that book the distinction is clearly laid down, but the book unhappily was never completed. With his manuscript, however, he left a "Note" warning us against regarding his earlier books as a full presentation of his developed ideas. From the note it is also evident that he thought the classification on which he had lighted was of the utmost importance, that he believed it would clear up all the difficulties which he had encountered in his earlier books—difficulties which he had come to see arose from a too exclusive consideration of the Napoleonic method of conducting war. "I look upon the first six books," he wrote in 1827, "as only a mass of material which is still in a manner without form and which has still to be revised again. In this revision the two kinds of wars will be kept more distinctly in view all through, and thereby all ideas will gain in clearness, in precision, and in exactness of application." Evidently he had grown dissatisfied with the theory of Absolute War on which he had started. His new discovery had convinced him that that theory would not serve as a standard for all natures of wars. "Shall we," he asks in his final book, "shall we now rest satisfied with this idea and by it judge of all wars, however much they may differ?"[1] He answers his question in the negative. "You cannot determine the requirements of all wars from the Napoleonic type. Keep that type and its absolute method before you to use *when you can* or *when you must*, but keep equally before you that there are two main natures of war."

In his note written at this time, when the distinction first came to him, he defines these two natures of war as follows: "First, those in which the object is the *overthrow of the enemy*, whether it be we aim at his political destruction or merely at disarming him and forcing him to conclude peace on our terms; and secondly, those in which our object is *merely to make some conquests on the frontiers of his country*, either for the purpose of retaining them permanently or of turning them to account as a matter of exchange in settling terms of peace."[2] It was in his eighth book that he intended, had he lived, to have worked out the comprehensive idea he had conceived. Of that book he says, "The chief object will be to make good the two points of view above mentioned, by which everything will be simplified and at the same time be given the breath of life. I hope in this book to iron out many creases in the heads of strategists and statesmen, and at least to show the object of action and the real point to be considered in war."[3]

That hope was never realised, and that perhaps is why his penetrating analysis has been so much ignored. The eighth book as we have it is only a fragment. In the spring of 1830—an anxious moment, when it seemed that Prussia would require all her best for another struggle single-handed with France—he was called away to an active command. What he left of the book on "War Plans" he describes as "merely a track roughly cleared, as it were, through the mass, in order to ascertain the points of greatest moment." It was his intention, he says, to "carry the spirit of these ideas into his first six books"—to put the crown on his work, in fact, by elaborating and insisting upon his two great propositions, viz. that war was a form of policy, and that being so it might be Limited or Unlimited.

The extent to which he would have infused his new idea into the whole every one is at liberty to judge for himself; but this indisputable fact remains. In the winter in view of the threatening attitude of France in regard to Belgium he drew up a war plan, and it was designed not on the Napoleonic method of making the enemy's armed force the main strategical objective, but on seizing a limited territorial object and forcing a disadvantageous counter-offensive upon the French. The revolutionary movement throughout Europe had broken the Holy Alliance to pieces. Not only did Prussia find herself almost single-handed against France, but she herself was sapped by revolution. To adopt the higher form of war and seek to destroy the armed force of the enemy was beyond her power. But she could still use the lower form, and by seizing Belgium she could herself force so exhausting a task on France that success was well within her strength. It was exactly so we endeavoured to begin the Seven Years' War; and it was exactly so the Japanese successfully conducted their war with Russia; and what is more striking, it was on similar lines that in 1859 Moltke in similar circumstances drew up his first war plan against France. His idea at that time was on the lines which Jomini held should have been Napoleon's in 1812. It was not to strike directly at Paris or the French main army, but to occupy Alsace-Lorraine and hold that territory till altered conditions should give him the necessary preponderance for proceeding to the higher form or forcing a favourable peace.

In conclusion, then, we have to note that the matured fruit of the Napoleonic period was a theory of war based not on the single absolute idea, but on the dual distinction of Limited and Unlimited. Whatever practical importance we may attach to the distinction, so much must be admitted on the clear and emphatic pronouncements of Clausewitz and Jomini. The practical importance is another matter. It may fairly be argued that in continental warfare—in spite of the instances quoted by both the classical writers—it is not very great, for reasons that will appear directly. But it must be remembered that continental warfare is not the only form in which great international issues are decided. Standing at the final point which Clausewitz and Jomini reached, we are indeed only on the threshold of the subject. We have to begin where they left off and inquire what their ideas have to tell for the modern conditions of worldwide imperial States, where the sea becomes a direct and vital factor.

Limited war and maritime empires—development of Clausewitz's and Jomini's theory of a limited territorial object, and its application to modern imperial conditions

The German war plans already cited, which were based respectively on the occupation of Belgium and Alsace-Lorraine, and Jomini's remarks on Napoleon's disastrous Russian campaign serve well to show the point to which continental strategists have advanced along the road which Clausewitz was the first to indicate clearly. We have now to consider its application to modern imperial conditions, and above all where the maritime element forcibly asserts itself. We shall then see how small that advance has been compared with its far-reaching effects for a maritime and above all an insular Power.

It is clear that Clausewitz himself never apprehended the full significance of his brilliant theory. His outlook was still purely continental, and the limitations of continental

warfare tend to veil the fuller meaning of the principle he had framed. Had he lived, there is little doubt he would have worked it out to its logical conclusion, but his death condemned his theory of limited war to remain in the inchoate condition in which he had left it.

It will be observed, as was natural enough, that all through his work Clausewitz had in his mind war between two contiguous or at least adjacent continental States, and a moment's consideration will show that in that type of war the principle of the limited object can rarely if ever assert itself in perfect precision. Clausewitz himself put it quite clearly. Assuming a case where "the overthrow of the enemy"—that is, unlimited war— is beyond our strength, he points out that we need not therefore necessarily act on the defensive. Our action may still be positive and offensive, but the object can be nothing more than "the conquest of part of the enemy's country." Such a conquest he knew might so far weaken your enemy or strengthen your own position as to enable you to secure a satisfactory peace. The path of history is indeed strewn with such cases. But he was careful to point out that such a form of war was open to the gravest objections. Once you had occupied the territory you aimed at, your offensive action was, as a rule, arrested. A defensive attitude had to be assumed, and such an arrest of offensive action he had previously shown was inherently vicious, if only for moral reasons. Added to this you might find that in your effort to occupy the territorial object, you had so irretriev- ably separated your striking force from your home-defence force as to be in no position to meet your enemy if he was able to retort by acting on unlimited lines with a stroke at your heart. A case in point was the Austerlitz campaign, where Austria's object was to wrest North Italy from Napoleon's empire. She sent her main army under the Archduke Charles to seize the territory she desired. Napoleon immediately struck at Vienna, destroyed her home army, and occupied the capital before the Archduke could turn to bar his way.

The argument is this: that, as all strategic attack tends to leave points of your own uncovered, it always involves greater or less provision for their defence. It is obvious, therefore, that if we are aiming at a limited territorial object the proportion of defence required will tend to be much greater than if we are directing our attack on the main forces of the enemy. In unlimited war our attack will itself tend to defend everything elsewhere, by forcing the enemy to concentrate against our attack. Whether the limited form is justifiable or not therefore depends, as Clausewitz points out, on the geograph- ical position of the object.

So far British experience is with him, but he then goes on to say the more closely the territory in question is an annex of our own, the safer is this form of war, because then our offensive action will the more surely cover our home country. As a case in point he cites Frederick the Great's opening of the Seven Years' War with the occupation of Saxony—a piece of work which materially strengthened Prussian defence. Of the British opening in Canada he says nothing. His outlook was too exclusively continental for it to occur to him to test his doctrine with a conspicuously successful case in which the territory aimed at was distant from the home territory and in no way covered it. Had he done so he must have seen how much stronger an example of the strength of limited war was the case of Canada than the case of Saxony. Moreover, he would have seen that the difficulties, which in spite of his faith in his discovery accompanied his

attempt to apply it, arose from the fact that the examples he selected were not really examples at all.

When he conceived the idea, the only kind of limited object he had in his mind was, to use his own words, "some conquests on the frontiers of the enemy's country," such as Silesia and Saxony for Frederick the Great, Belgium in his own war plan, and Alsace-Lorraine in that of Moltke. Now it is obvious that such objects are not truly limited, for two reasons. In the first place, such territory is usually an organic part of your enemy's country, or otherwise of so much importance to him that he will be willing to use unlimited effort to retain it. In the second place, there will be no strategical obstacle to his being able to use his whole force to that end. To satisfy the full conception of a limited object, one of two conditions is essential. Firstly, it must be not merely limited in area, but of really limited political importance; and secondly, it must be so situated as to be strategically isolated or to be capable of being reduced to practical isolation by strategical operations. Unless this condition exists, it is in the power of either belligerent, as Clausewitz himself saw, to pass to unlimited war if he so desires, and, ignoring the territorial objective, to strike at the heart of his enemy and force him to desist.

If, then, we only regard war between contiguous continental States, in which the object is the conquest of territory on either of their frontiers, we get no real generic difference between limited and unlimited war. The line between them is in any case too shadowy or unstable to give a classification of any solidity. It is a difference of degree rather than of kind. If, on the other hand, we extend our view to wars between world-wide empires, the distinction at once becomes organic. Possessions which lie oversea or at the extremities of vast areas of imperfectly settled territory are in an entirely different category from those limited objects which Clausewitz contemplated. History shows that they can never have the political importance of objects which are organically part of the European system, and it shows further that they can be isolated by naval action sufficiently to set up the conditions of true limited war.

Jomini approaches the point (in his book *The Art of War*), but without clearly detaching it. In his chapter "On Great Invasions and Distant Expeditions," he points out how unsafe it is to take the conditions of war between contiguous States and apply them crudely to cases where the belligerents are separated by large areas of land or sea. He hovers round the sea factor, feeling how great a difference it makes, but without getting close to the real distinction. His conception of the inter-action of fleets and armies never rises above their actual co-operation in touch one with the other in a distant theatre. He has in mind the assistance which the British fleet afforded Wellington in the Peninsula, and Napoleon's dreams of Asiatic conquest, pronouncing such distant invasions as impossible in modern times except perhaps in combination with a powerful fleet that could provide the army of invasion with successive advanced bases. Of the paramount value of the fleet's isolating and preventive functions he gives no hint.

Even when he deals with oversea expeditions, as he does at some length, his grip of the point is no closer. It is indeed significant of how entirely continental thought had failed to penetrate the subject that in devoting over thirty pages to an enumeration of the principles of oversea expeditions, he, like Clausewitz, does not so much as mention the conquest of Canada; and yet it is the leading case of a weak military Power succeeding by the use of the limited form of war in forcing its will upon a strong one, and

succeeding because it was able by naval action to secure its home defence and isolate the territorial object.

For our ideas of true limited objects, therefore, we must leave the continental theatres and turn to mixed or maritime wars. We have to look to such cases as Canada and Havana in the Seven Years' War, and Cuba in the Spanish-American War, cases in which complete isolation of the object by naval action was possible, or to such examples as the Crimea and Korea, where sufficient isolation was attainable by naval action owing to the length and difficulty of the enemy's land communications and to the strategical situation of the territory at stake.

These examples will also serve to illustrate and enforce the second essential of this kind of war. As has been already said, for a true limited object we must have not only the power of isolation, but also the power by a secure home defence of barring an unlimited counterstroke. In all the above cases this condition existed. In all of them the belligerents had no contiguous frontiers, and this point is vital. For it is obvious that if two belligerents have a common frontier, it is open to the superior of them, no matter how distant or how easy to isolate the limited object may be, to pass at will to unlimited war by invasion. This process is even possible when the belligerents are separated by a neutral State, since the territory of a weak neutral will be violated if the object be of sufficient importance, or if the neutral be too strong to coerce, there still remains the possibility that his alliance may be secured.

We come, then, to this final proposition—that limited war is only permanently possible to island Powers or between Powers which are separated by sea, and then only when the Power desiring limited war is able to command the sea to such a degree as to be able not only to isolate the distant object, but also to render impossible the invasion of his home territory.

Here, then, we reach the true meaning and highest military value of what we call the command of the sea, and here we touch the secret of England's success against Powers so greatly superior to herself in military strength. It is only fitting that such a secret should have been first penetrated by an Englishman. For so it was, though it must be said that except in the light of Clausewitz's doctrine the full meaning of Bacon's famous aphorism is not revealed. "This much is certain," said the great Elizabethan on the experience of our first imperial war; "*he that commands the sea is at great liberty and may take as much or as little of the war as he will, whereas those that be strongest by land are many times nevertheless in great straits.*" It would be difficult to state more pithily the ultimate significance of Clausewitz's doctrine. Its cardinal truth is clearly indicated—that *limited wars do not turn upon the armed strength of the belligerents, but upon the amount of that strength which they are able or willing to bring to bear at the decisive point*.

It is much to be regretted that Clausewitz did not live to see with Bacon's eyes and to work out the full comprehensiveness of his doctrine. His ambition was to formulate a theory which would explain all wars. He believed he had done so, and yet it is clear he never knew how complete was his success, nor how wide was the field he had covered. To the end it would seem he was unaware that he had found an explanation of one of the most inscrutable problems in history—the expansion of England—at least so far as it has been due to successful war. That a small country with a weak army should have been able to gather to herself the most desirable regions of the earth, and to gather them

at the expense of the greatest military Powers, is a paradox to which such Powers find it hard to be reconciled. The phenomenon seemed always a matter of chance—an accident without any foundation in the essential constants of war. It remained for Clausewitz, unknown to himself, to discover that explanation, and he reveals it to us in the inherent strength of limited war when means and conditions are favourable for its use.

We find, then, if we take a wider view than was open to Clausewitz and submit his latest ideas to the test of present imperial conditions, so far from failing to cover the ground they gain a fuller meaning and a firmer basis. Apply them to maritime warfare and it becomes clear that his distinction between limited and unlimited war does not rest alone on the moral factor. A war may be limited not only because the importance of the object is too limited to call forth the whole national force, but also because the sea may be made to present an insuperable physical obstacle to the whole national force being brought to bear. That is to say, a war may be limited physically by the strategical isolation of the object, as well as morally by its comparative unimportance.

Notes

1 Carl von Clausewitz, *On War*, edited and translated by Michael Howard and Peter Paret (Princeton, NJ: Princeton University Press, 1989), Book viii. chap. ii.
2 Ibid., Prefatory Notice, p. vii.
3 Ibid., p. viii.

9 Kosovo and the great air power debate

Daniel L. Byman and Matthew C. Waxman

The capitulation of Serbian President Slobodan Milosevic on June 9, 1999, after seventy-eight days of bombing by the North Atlantic Treaty Organization (NATO), is being portrayed by many as a watershed in the history of air power. For the first time, the use of air strikes alone brought a foe to its knees—and at the cost of no NATO lives. The prophecies of Giulio Douhet and other air power visionaries appear realized.[1] Lieut. Gen. Michael Short, who ran the bombing campaign, has argued that "NATO got every one of the terms it had stipulated in Rambouillet and beyond Rambouillet, and I credit this as a victory for air power."[2] This view is not confined to the air force. Historian John Keegan conceded, "I didn't want to change my beliefs, but there was too much evidence accumulating to stick to the article of faith. It now does look as if air power has prevailed in the Balkans, and that the time has come to redefine how victory in war may be won."[3] Dissenters, of course, raise their voices. Noting the failure of air power to fulfill its promise in the past, they are skeptical of its efficacy in Kosovo. Instead, they point to factors such as the threat of a ground invasion; the lack of Russian support for Serbia, or the resurgence of the Kosovo Liberation Army (KLA) as key to Milosevic's capitulation. Without these factors, dissenters argue, air strikes alone would not have forced Milosevic's hand. They also point out that air power failed to prevent the very ethnic cleansing that prompted Western leaders to act in the first place.[4]

The importance of this debate goes beyond bragging rights. Already, some military planners are using their interpretations of the air war in Kosovo, Operation Allied Force, to design future campaigns. All the services are drawing on Kosovo's supposed lessons in their procurement requests.[5]

Unfortunately, the current debate over air power's effectiveness confuses more than it enlightens. The Kosovo experience does little to vindicate the general argument that air attacks alone can compel enemy states to yield on key interests. But this caution to air power's champions should be tempered by an equally firm rejection of its critics: air power's past failures to coerce on its own do not discredit its role in successful coercive diplomacy. Air power is like any other instrument of statecraft. Instead of asking if air power alone can coerce, the important questions are: how can it contribute to successful coercion, and under what circumstances are its contributions most effective?

The academic contribution to this debate increases rather than untangles the confusion.[6] The U.S. military has spent more than a decade trying to learn to think in

terms of joint operations—the synergistic integration of air, land, space, and sea forces—and move away from service-specific perspectives.[7] Despite a partial shift in the air force's own thinking, the most prominent work on air power theory remains focused on air power-centric or air power-only strategies.[8] At the same time, most academic examinations of *coercion* focus on a single coercive instrument at a time—does air power alone, for instance, cause adversaries to capitulate?—while in reality adversaries consider the damage wrought by air power only in the context of overall military balance, internal stability, diplomatic support, and a host of other factors.[9]

This article argues that the current air power debate is fundamentally flawed. The classic question—can air power alone coerce?—caricatures air power's true contributions and limits, leading to confusion over its effectiveness. In Kosovo the use of air power was a key factor in Belgrade's decision to surrender, but even here it was only one of many. U.S. and coalition experience in Kosovo and in other conflicts suggests that air power can make a range of contributions to the success of coercion, including: raising concern within an adversary regime over internal stability by striking strategic targets, including infrastructure; neutralizing an adversary's strategy for victory by attacking its fielded forces and the logistics upon which they depend; bolstering the credibility of other threats, such as a ground invasion; magnifying third-party threats from regional foes or local insurgents; and preventing an adversary from inflicting costs back on the coercing power by undermining domestic support or by shattering the coercing coalition.

In the Kosovo crisis, Serbian concerns over regime instability, NATO's threat of a ground invasion, and an inability to inflict costs on NATO (particularly an inability to gain Moscow's backing) probably played the largest role in motivating Milosevic's concessions. Air power played a critical role in all three of these, but in none of them did air power truly operate in isolation from other coercive instruments or pressures.

This article uses the Kosovo crisis to illustrate many of its arguments on the effectiveness of air power. It does not, however, pretend to offer a definitive case study. The motivations of Milosevic and other Serbian leaders—the key data for understanding coercion—remain opaque at this time.[10] We draw inferences about Serbian decision-making based on available evidence, and point out where more information is needed to assess popular hypotheses on why Belgrade capitulated. When possible, we try to indicate how new evidence from the Kosovo experience would affect our conclusions. Rather than settling the many controversies over air power's effectiveness and the broader Kosovo conflict, our primary intention is to reshape the air power debate.

The following section provides an overview of how to think about air power and coercion, addressing several key limits of the current literature. We next examine NATO goals in Kosovo and the mixed success eventually achieved. Using that baseline, we explore various explanations for Belgrade's eventual capitulation and clarify how air power's role in each of them should be understood; we leave aside the issue of whether coercion was a proper strategy for addressing the Balkan crisis and focus instead on how to assess air power as a tool of that strategy. We conclude with recommendations for recasting the air power debate to better reflect air power's true contributions and limits.

Air power and coercion: clarifying the debate

As NATO Commander Gen. Wesley Clark explained, the air war "was an effort to coerce, not to seize."[11] Discerning air power's contribution in Kosovo and elsewhere therefore requires first understanding the nature of "coercion."[12] This section defines this confusing term and then elaborates three general propositions critical to the air power debate: coercion should be understood dynamically; air power's impact is both additive and synergistic with other types of pressure; and the "successful" use of force must be assessed as a spectrum of possible outcomes, not as a binary variable. These points provide a foundation upon which to build hypotheses about how air power contributed to the outcome of the Kosovo crisis and, more broadly, when coercive diplomacy is likely to accomplish desired goals.

Defining coercion

Coercion is the use of threatened force, including the limited use of actual force to back up the threat, to induce an adversary to behave differently than it otherwise would.[13] Coercion is not destruction. Although partially destroying an adversary's means of resistance may be necessary to increase the effect and credibility of coercive threats, coercion succeeds when the adversary gives in while it still has the power to resist. Coercion can be understood in opposition to what Thomas Schelling termed "brute force": "Brute force succeeds when it is used, whereas the power to hurt is most successful when held in reserve. It is the threat of damage, or of more damage to come, that can make someone yield or comply."[14] Coercion may be thought of, then, as getting the adversary to act a certain way via anything short of brute force; the adversary must still have the capacity for organized violence but *choose* not to exercise it.[15]

Coercion as a dynamic process

There is a strong temptation to treat coercive threats as single, discrete events, failing to capture the dynamic nature of coercion. Analysts instead should view coercive contests as series of moves and countermoves, where each side acts not only based on and in anticipation of the other side's moves, but also based on other changes in the security environment.

Most standard explorations of coercion rely on an expected utility model to explain whether coercion succeeds or fails.[16] These models predict outcomes by comparing the expected costs and benefits of a particular action. In his study of strategic bombing as an instrument of coercion, for example, Robert Pape uses such a model: "Success or failure is decided by the target state's decision calculus with regard to costs and benefits . . . . When the benefits that would be lost by concessions and the probability of attaining these benefits by continued resistance are exceeded by the costs of resistance and the probability of suffering these costs, the target concedes."[17] Coercion should work when the anticipated suffering associated with a threat exceeds the anticipated gains of defiance.

This "equation" is useful for understanding coercion in the abstract, but it often confuses the study of coercion when taken as a true depiction of state behavior. One

problem is that this equation fosters static, one-sided thinking about coercive contests. It encourages analysts to think about costs and benefits as independent variables that can be manipulated by the coercer, while the adversary stands idle and recalculates its perceived interests as various threats are made and implemented.

A more accurate picture requires viewing coercion as a dynamic, two-player (or more) contest. The adversary, too, can move so as to alter the perceived costs and benefits associated with certain actions.[18] It can divert resources from civilian to military functions, for example, to offset a coercer's attempts to undermine the adversary's defensive capacities. It can engage in internal repression to neutralize a coercer's efforts to foment instability. Rather than simply minimizing the effect of coercive threats, an adversary may try to impose costs on the coercing power; it can escalate militarily or attempt to drive a diplomatic wedge between states aligned against it, perhaps convincing the coercer to back down and withdraw its own threat to impose costs.[19]

Coercive pressure does not exist only at particular moments. Military capabilities and other forms of pressure, and the threat of their use, exert constant influence on allies and adversaries alike, though in varying degrees. When we think about a "case" of coercion, then, we are really not talking about a sudden appearance of the threat of force. Instead, we are talking about relative changes in the threat of force—usually denoted by demonstrative uses of force, explicit threats and demands, and other overt signs. In other words, there is an ever-present baseline, or level of background threat, and we seek to examine deviations from, or spikes in, that level of threat.[20] Using the 1972 Christmas bombings as an example, a standard question is: did the Christmas bombings coerce North Vietnam to negotiate terms more favorable to the United States? This is a poor and misleading proxy for the more useful question to understanding air power's contribution: did the marginal increase in force represented by the Christmas bombings increase the probability that North Vietnam would engage in behavior it would not otherwise choose?

Of course, the latter question is extremely difficult to answer because it requires inquiry into adversary decisionmaking, which in turn requires picking apart the many different coercive pressures bearing on an adversary at any given time and assessing their individual contribution. Did strategic air attacks cause Japan to surrender in World War II? Yes, Japan surrendered. And, yes, air attacks undoubtedly were a key element in its decisionmaking. But these attacks took place in the context of a crippling blockade, Soviet attacks in Manchuria, and so on.

Any assessment of air power's effectiveness should focus on the perceived costs it creates in an adversary's mind. But, viewing coercion dynamically, that assessment should incorporate the adversary's ability to neutralize those costs (or its belief that it can) as well as the set of other threats bearing down on the adversary at any given time.

Thinking synergistically

Not only are coercive pressures sometimes additive, but they may combine synergistically. A major limit of the air power debate is its focus on one instrument in isolation. Assessments of air power, or any other coercive instrument, should focus instead on its effect in combination with other instruments.

Pape's critical assessment of why the bombing of adversary populations does not lead to adversary capitulation is often wrongly used as evidence for the ineffectiveness of air power as a coercive instrument at all. This has contributed to an underestimation of air power's importance. As R.J. Overy pointed out about the bombing campaign against Germany and Japan: "There has always seemed something fundamentally implausible about the contention of bombing's critics that dropping almost 2.5 million tons of bombs on tautly-stretched industrial systems and war-weary urban populations would not seriously weaken them . . . . The air offensive was one of the decisive elements in Allied victory."[21] Overy's point is not that air power won the war single-handedly, but that air power contributed significantly to Allied success, as did victories at sea and on land. Air power and other instruments must be understood in context, not in isolation.

The bombing of North Korea during the Korean War highlights some synergistic effects of coercive air attacks. Pape argues that the risk posed by the U.S. atomic arsenal, not strategic bombing, pushed Pyongyang to the bargaining table.[22] But by separating these instruments for analytic purposes, we lose track of how they, in tandem, reinforce each other. Air power destroyed North Korean and Chinese fielded forces and logistics and demolished North Korean industrial complexes. Although North Korea and China retained the ability to continue military operations, U.S. air attacks made doing so more costly. When combined with the threat of atomic strikes, the costs of continuing fruitless conventional operations increased further. The combination of these instruments, however, may have been greater than the sum of their parts: escalating conventional air attacks may have bolstered the credibility of U.S. atomic threats by showcasing Washington's willingness to devastate North Korea's population and industrial base.[23]

The difficulties of dissecting adversary decisionmaking to assess the impact of particular coercive pressures are considerable. Hence analysts typically are tempted to focus on adversary states' observed behavioral response—did it *do* what the coercer wanted?—and correlate that response to particular events. But this is a misleading substitute for the more fundamental issue of whether specific threats, in the context of other pressures, significantly affected opponents' decisionmaking. A narrow focus on whether a coercive instrument either achieved objectives or failed outright leads to arbitrary and misleading coding of coercive strategies. Even limited, contributory effects, when combined with other coercive instruments, may be enough to force a policy change even though the use of an instrument in isolation may have failed.[24]

The uncertain meaning of "success"

Even if air power is evaluated in combination with other instruments rather than in isolation, assessing its contribution to successful coercion requires picking a baseline: what is success? Studies of coercion often pay inadequate attention to the range of goals pursued by a coercer. Moreover, they typically employ absolute, binary metrics of success, in which a coercive strategy either worked or it failed.[25] Assessments of coercive strategies must shed these tendencies and consider a spectrum of possible outcomes.

Classifying a case as "success" or "failure" depends on the particular definition of the behavior sought in that case, leading to confusion when comparing different analyses of

the same event. For example, in Operation Desert Storm the behavior sought from Saddam Hussein might have been Iraq peacefully retreating from Kuwait. Or, it might have instead simply been Iraq not being in Kuwait, one way or another. One might conclude that the air campaign successfully coerced Iraq because Iraq was willing to withdraw by the end of the air campaign under conditions relatively favorable to the United States.[26] Classifying the air campaign as successful coercion, however, assumes that the coalition's objective was simply an Iraqi expulsion. But was that the objective? Janice Gross Stein concludes that the air campaign represented a failure of coercion because she interpreted differently what behavior the coalition sought.[27] To Stein, the air campaign represented a failure of coercion the moment the ground war began, because coalition objectives were to induce Iraq to withdraw *without having to forcefully expel it* through the use of ground troops.

The way in which the very issue of "success" is framed exacerbates this confusion. The use of absolute, binary measures—did air power coerce, yes or no?—does not capture the complex and often subtle effects of coercive threats. Iraq both conceded and defied the United States during Desert Storm: it offered a partial withdrawal from Kuwait while it refused to accept all U.S. demands. The straitjacket of binary metrics distorts the lessons we may draw from aggregated empirical data when cases in which air power helped move an adversary in favorable ways but short of the coercer's maximal objectives are coded as either absolute failures or absolute successes.[28]

At the same time as binary metrics may bias studies of coercion one way or the other, they may also overlook the detrimental effects of coercive strategies. Coercion carries the potential for backfire; threatening an adversary may provoke an increase in unwanted behavior rather than the desired course. The 1967 Arab-Israeli War and the 1969–70 Israeli-Egyptian War of Attrition are frequently cited examples of inadvertent escalation resulting from coercive threats.[29] In other words, coercive strategies can leave the coercer worse off than before. Yet within the binary framework, the worst outcome recognized is the null result: backfires and hardening of adversary resistance are coded just as if coercive threats caused no effect.

Conceptually, the dependent variable should be understood as a marginal change in probability of behavior. Against a fluctuating background level of threat (and blandishments, for that matter), the probability of the adversary altering its behavior is never zero. Viewing success in absolute terms, based on observed behavior, ignores this positive probability and classifies all desired behavior as "successful" coercion, regardless of how likely that behavior was prior to the additional coercive threat. Data limits may require a focus on observable behavior, but analysts should not forget that the true effects of coercive strategies lie in the altered—or, in some cases, hardened—policy preferences or decisionmaking calculi of the actors involved.

Conclusions for the study of air power

This critique of the air power debate and previous attempts to resolve it yields several implications for assessing the coercive use of air power in Kosovo or elsewhere. First, the dependent variable must be understood conceptually as a change in probability even though for measurement reasons we must largely focus on changes in observed behavior.

That is, the effect of a coercive instrument such as air power should be thought of as the increased (or decreased) likelihood of an adversary's capitulation. Ultimately, such an assessment can be achieved only through an in-depth analysis of the Milosevic regime's decisionmaking process. Second, the independent variable must be thought of as a marginal increase in threatened costs that air power created, not the absolute level of force. In assessing NATO air attacks on Serbia, analysts should focus not on the role air power played *instead of* a ground invasion, for example, but on the role it played in combination with the possibility of one. Third, the likelihood of successful coercion depends on the expected impact of the coercer's threat as well as the available responses of the adversary. Analysts must therefore evaluate coercive strategies and the tools used to implement them not only by judging the perceived costs of resistance that threats create. They must also focus on the ability of these strategies to block possible counter-moves that would otherwise neutralize the threats.

NATO goals and Kosovo outcomes

A first step in determining the success or failure of air power in Kosovo is understanding the goals set by the NATO coalition. At the outset of the crisis, the Clinton administration articulated three goals of the bombing campaign: to "demonstrate the seriousness of NATO's opposition to aggression," to deter Milosevic's "continuing and escalating" attacks in Kosovo, and "to damage Serbia's capacity to wage war in the future."[30] These goals were reflected in official NATO statements, which required that Milosevic end repression in Kosovo, withdraw his forces from the province, agree to an international military presence there as well as to the safe return of refugees and displaced persons, and provide assurances of his willingness to work toward a political framework agreement along the lines of the Rambouillet accords.[31]

In practice these policy statements boiled down to several complementary objectives: to compel a cessation to the Milosevic regime's policy of ethnic terror; to force a withdrawal of Serbian troops to ensure the return of Albanian refugees; to compel Belgrade to accept a political settlement that promised a high degree of autonomy to Kosovo; and to demonstrate the viability of NATO to the post-Cold War world.[32]

In a defeat for overall strategy, NATO threats and bombing did not halt the ethnic terror for seventy-eight days, more than enough time for Serbia to displace almost a million Kosovar ethnic Albanians and kill thousands within Kosovo. But, in the end, Belgrade yielded. Most of the refugee and displaced Albanians have returned home, and Serbian troops are no longer in the Kosovo province. Milosevic accepted a deal that effectively ended Serbian control over the Kosovo province. "Success" for the objective of the cessation of ethnic terror becomes a definitional question: is stopping the terror and expulsion after two-and-a-half months too little too late or the best of a bad situation?

The answer is both. NATO forced Serbia to capitulate along lines similar to Rambouillet and remained relatively cohesive in the process. But NATO failed to prevent a massive ethnic cleansing campaign, and strains in alliance unity exposed limits to future operations.[33] When analyzing the Kosovo operations and air power's role, it is this decidedly limited victory that must be used as the benchmark.

Coercive air power and Kosovo

Commentators and analysts have advanced different explanations for why Milosevic eventually capitulated to NATO demands, with varying implications for the broader air power debate. None of these is mutually exclusive, and our analysis indicates that several of these factors indeed played a role in Milosevic's decision to surrender. These explanations include (1) NATO had destroyed a wide range of strategic targets in Serbia and threatened to continue destroying others, thus posing the specter of popular and elite dissatisfaction with the regime and increased internal unrest; (2) NATO had destroyed Serbia's fielded forces, making it impossible for Milosevic to hold Kosovo; (3) the prospect of a ground compaign intimidated Milosevic; (4) Milosevic and his forces perceived a growing military threat from the KLA; and (5) Serbia lacked any means of imposing costs on NATO countries, either militarily or diplomatically, or by shattering the coalition; most important, Serbia proved incapable of enlisting the support of Russia to offset NATO pressure.

These explanations are complementary rather than competing. All could have affected Milosevic's willingness to concede. For each of the first four arguments, this section first outlines the suggested hypothesis, offering theoretical or historical evidence that supports it. Next, it describes the NATO activities that would have contributed to this factor and any observed impact on Serbia's behavior or decisionmaking. Finally, it assesses the contribution of air power and proposes how this assessment, and future reassessments based on new evidence, should be interpreted within the broader air power debate. The analysis of the last hypothesis—the failure of Serbian counter-coercion—has a different structure given its counterfactual nature.

Our reading of available evidence indicates that the bombing of strategic targets inside Serbia, the threat of a ground invasion, and the failure of Serb counter-coercive strategies against NATO countries (particularly Belgrade's inability to gain Moscow's support) contributed greatly to the success of coercion. The KLA attacks probably counted for less, while the destruction of Serbian fielded forces played only a marginal role. Air power facilitated several of these factors, leading to the limited success of coercion, as qualified earlier.

Fostering discontent by striking strategic targets

Some analysts attribute NATO's success to air strikes that destroyed a wide range of "strategic" targets such as command bunkers, power stations, and infrastructure. As one NATO official proclaimed, hitting valuable targets in Belgrade is "what really counted."[34] The theory behind this explanation is that NATO was able to ratchet up pain on a recalcitrant Serbia until the attacks (and prospects of more to come) proved too costly. The weight of these attacks, it is argued, brought home the war to the people of Serbia and its leaders, demonstrating to them the price of continued resistance to NATO.

Beginning on March 29, 1999, after several days of tightly circumscribed targeting, NATO broadened and intensified the air campaign. Allied air attacks destroyed key roads and bridges in Yugoslavia, as well as oil refineries, military fuel installations, and other fixed targets, including army bases. NATO also attacked targets in Belgrade, such

as the headquarters of Milosevic's Socialist Party and radio and television broadcasting facilities. On May 24, NATO aircraft disabled the national power grid.[35] Yugoslav government reporting indicates that NATO damaged or destroyed twelve railway stations, thirty-six factories, twenty-four bridges, seven airports, seventeen television transmitters, along with other infrastructure and communications targets.[36]

Air war planners hoped that NATO strikes would foster elite and popular discontent with the Milosevic regime. Gen. Klaus Naumann, who chaired the NATO alliance's military committee, declared NATO's intention "to loosen his grip on power and break his will to continue."[37] By striking military barracks and other military targets, NATO also sought to increase military dissatisfaction: through propaganda leaflets, air planners tried to create a direct link between the cutoff of gasoline, electricity, and other resources and the Milosevic regime's policies.[38]

Historical evidence suggests that threats to internal stability created through strategic attacks can contribute to coercion, though this contribution is seldom decisive by itself, and attempts often backfire in practice. Internal security is of overriding concern to developing states.[39] Even in cases where outside attacks failed to produce unrest—the norm, not the exception, despite the hopes of strategists in the coercing state—the *fear* of unrest has often prompted adversary leaderships to respond. In both World War II Japan and Germany, leaders spent vast sums of money on air defense and conducted otherwise senseless military operations to demonstrate that they were responding to the Allies' bombing attacks.[40] During the War of Attrition, Israeli strikes against a range of targets in Egypt generated intense leadership concern about unrest in Cairo, even though the Egyptian people remained behind their government.[41] Israeli air attacks on strategic targets in Syria during the 1973 Arab-Israeli war shook Hafez al-Asad's regime. More recently in Iraq, Saddam Hussein has demonstrated a penchant for backing down in the face of U.S. and other countries' threats when defiance risked eroding support for Saddam within his power base.[42] Popular or elite unrest is a sensitive point for many regimes but, as discussed later in this subsection, it is often one that adversary regimes are well equipped to counter.

Some evidence suggests that Milosevic capitulated in part because of concerns about internal unrest. Milosevic, like many demagogues, shows concern with his popularity, or at least the effects that unpopularity may have on his standing with elements of his power base.[43] Initially the air strikes bolstered the Yugoslav president's stature. Belgrade hosted large rallies in support of Milosevic after the NATO air strikes began.[44] Over time, however, NATO air strikes appear to have contributed to discontent in the federation. Rallies in support of the president receded, and Milosevic may have feared that continued conflict would lead to further losses in popularity.

The NATO bombing also fed dissatisfaction within the military.[45] The number of Serbian desertions increased during the campaign, and morale problems were considerable. Several of Milosevic's top generals had to be placed under house arrest, testifying to his sensitivity about possible loss of political control.[46]

The threat of unrest elsewhere in the federation may also have unnerved Milosevic. Before the conflict began, Montenegro had elected an anti-Milosevic leader and had relatively independent television and newspapers. In the months preceding Operation Allied Force, friction grew between Montenegrin leaders and the government in

Belgrade. Montenegrin officials sought greater autonomy and opposed the war in Kosovo. The war heightened this tension, as Montenegro kept out of the war and stepped up efforts to develop its internal security forces.[47]

Air power played a major role in raising these various threats to regime stability. Although neither the Serbian population nor the military appeared ready to rebel and overthrow Milosevic, discontent from the air strikes was clearly growing by the end of the campaign. As in previous conflicts, the psychological impact of air strikes was probably magnified because Serbia could do little in retaliation or response.[48]

Although the Kosovo experience offers evidence that strategic attacks aimed at undermining regime support can, under some circumstances, contribute to coercive success, popular or elite unrest in response to coercion often does not occur or takes time to develop. Indeed, a recurring historical lesson is that attempts to force an adversary's hand by targeting its populace's will to resist may backfire.[49] Coercion often stiffens an adversary's determination, as the leadership and the country as a whole unite against the coercer. A coercive threat itself may raise the cost of compliance for an adversary's leadership by provoking a nationalist backlash. In Somalia, U.S. army helicopter strikes on Mohammed Farah Aideed's subordinates not only failed to intimidate the warlord but may have provoked anti-U.S. sentiment, contributing to the demise of the U.S.-led operation. Although many clan leaders had been critical of Aideed's confrontational stance toward the United States, they united behind him when faced with an outside threat. Russian attempts to bomb the Chechens into submission during the 1994–96 fighting produced unified defiance, as even residents who formerly favored peaceful solutions—or favored fighting each other—banded to expel the invader.[50] In Kosovo spontaneous pro-Milosevic rallies occurred in response to the initial bombing. Over time, support fell, but only after a sustained and lengthy campaign.[51]

Part of the difficulty of manipulating adversary regime support with military attacks stems from the ability of dictatorial regimes to maintain order through extensive and well-oiled propaganda machines, in addition to repressive police and security forces.[52] During Operation Allied Force, Milosevic shut down independent newspapers and radio stations inside Serbia, used state-run television to stoke nationalist reactions, electronically jammed some U.S. and NATO broadcasts intended for the Serbian populace, and prohibited the Western press from entering much of Kosovo (while granting it permission to film bombed sites).

To the extent that NATO air attacks fostered internal dissent and therefore moved Serbian leadership decisionmaking, the Kosovo experience confirms past lessons. Air power can contribute to coercion by striking targets whose destruction helps foment dissent and by raising fears among an adversary's leadership. However, while air power and other military instruments that can strike valuable targets may be extremely precise in a technological sense, fine-tuning their political effects on an adversary population remains largely beyond the capability of planners and political leaders.

It is in assessing this relationship between targeting and desired political effects—the heart of coercive strategy-making—that shedding the binary analytical framework is critical. On the one hand, NATO attacks eventually appeared to erode support among some segments of the Serbian population, thereby intensifying pressure on Milosevic to capitulate. On the other hand, these attacks also inflamed nationalist passions among

other segments (especially in the short term), and Milosevic proved skilled at exploiting these passions with his propaganda machinery. Analyzing possible outcomes of coercive strategies and the impact of certain types of threats as either a "yes" or a "no" obscures the potential for strikes or any other use of force to backfire, hardening adversary resistance and alleviating coercive pressure. From a policy standpoint, the message should be one of caution: the threat of internal instability is often a critical element of adversary decisionmaking, but it is one that remains difficult to shape with coercive instruments.

The destruction of Serbian armed forces

One of air power's most important functions—one increasingly practical given continuing advances in intelligence and precision-strike capabilities—is threatening an adversary with defeat or otherwise preventing it from achieving its military objectives. Such a "denial" strategy focuses on the benefits side of the coercion equation, reducing the incentives for an adversary to engage in the unwanted behavior.[53] According to Pape, "Denial strategies seek to thwart the enemy's military strategy for taking or holding its territorial objectives, compelling concessions to avoid futile expenditures of further resources."[54]

The NATO air campaign made a priority of attacking Serbian armed forces. General Clark stated that "what we are trying to do is interdict and cut off Kosovo and make it much more difficult for [Milosevic] to sustain military operations there."[55] General Short described targeting fielded forces as Clark's "No. 1 priority."[56] NATO dedicated approximately 30 percent of its sorties to striking Serbian forces in addition to attacking air defenses, striking command-and-control assets, interdicting military supplies, and otherwise trying to damage Serbia's war machine.[57] NATO focused particular attention on striking Serbian heavy military equipment, both because NATO was better able to hit these targets than lighter Serbian forces and paramilitary units and because this entailed a relatively low risk of hitting civilian targets by mistake.[58] By degrading Serbian military capabilities in Kosovo, NATO planners sought to pry off Milosevic's grip on the province one finger at a time until he conceded in the face of potentially losing Kosovo without even nominal control—the ultimate threat to a man who rose in part by exploiting Serb nationalism over Kosovo.[59] Even if Milosevic refused to back down, it was hoped that degrading his forces would reduce his capacity for ethnic repression.

The historical record offers strong support for Pape's theses that neutralizing an adversary's ability to achieve its desired ends through force is critical to coercion, and that such denial is a key contribution that air power can make to coercion—an argument that we do not repeat here. Successful denial, however, requires defeating the enemy's particular *strategy*, not simply stopping its conventional military operations.[60]

The precision, flexibility, and versatility of the air arm suits it well for denying an adversary the perceived fruits of military operations—as long as the adversary's strategy relies on the employment of heavy forces or requires extensive resupply efforts. Air power can be extremely effective against fielded forces in certain environments. Desert Storm demonstrated this capability vividly, when U.S. air power disabled parts of two Iraqi corps before they even engaged U.S. ground forces near al-Khafji. The small Iraqi force that did capture the empty town was then easily isolated and destroyed by coalition

ground and air forces.[61] Air power has also proven a powerful interdiction tool, as shown in Operation Desert Storm, the Linebacker operations in Vietnam, and Israel's experience in the 1967 war, where Israeli attacks on Egyptian supplies and reinforcements greatly contributed to Israel's success.[62]

But contrary to much of this historical experience, the air attacks directed at fielded Serbian forces in Kosovo appeared to play little role in Belgrade's concessions. The NATO campaign did not defeat Serbia's strategy for controlling Kosovo because Milosevic was able to induce the ethnic Albanian exodus he desired before NATO air attacks had significant effects on his fielded forces; even after Operation Allied Force reached its full intensity, these forces could continue to terrorize local populations without exposing themselves by massing. NATO's reporting of Serbian ground activity indicated that the air campaign had not halted Serbia's infantry and artillery attacks nor prevented Milosevic from increasing the size of his forces in Kosovo. Despite the massive air strikes, Milosevic could have maintained de facto control of Kosovo for many months and completed his ethnic cleansing.[63]

Although air strikes diminished the Serbs' offensive power, the degree of damage to Serbian armed forces is not known at this time. Using a range of deception techniques, the Serbian army limited damage done to its key assets, particularly tanks and artillery pieces. Even assuming considerable devastation to Serbian forces, however, they remained more than a match for KLA irregulars.[64] In operations during the last days of the war, KLA offensives pulled Serbian forces out into the open where they were substantially more vulnerable to NATO air attack. But even then the KLA failed to open a corridor to resupply its forces, nor did it demonstrate that it was capable of holding territory against the Serbian army for long.[65] It could be argued that the prospect of greater and greater losses created fear in Milosevic's mind that his forces might eventually be overrun. At this time, though, there is little evidence linking NATO's tactical success scored late in the conflict to the Serbian decision to surrender. Moreover, it is now clear that Milosevic retained considerable heavy forces and that his troops probably could have defeated the KLA with superior Serbian numbers and organization even had the bombing continued through the summer.

Operation Allied Force exposed several limits to air power's ability to coerce through denial. Most notably, air power's effectiveness is limited against particular types of targets and in particular environments. Adversaries fighting in mountainous, urban, or jungle terrain can often camouflage their movements, making them harder to attack. The effectiveness of air power against light infantry targets is limited in almost any environment.[66] Technological advances in surveillance, all-weather operations, and precision-guided munitions make air power more effective against these difficult-to-target foes, but such forces remain elusive. In Kosovo, air power faced an adversary skilled at deception and able to hide its forces. Perhaps more important, Pape's argument regarding the need to counter a foe's particular strategy is borne out in Kosovo: because only lightly armed forces were needed to purge village populations and defeat KLA insurgents, attacks on supply or on mechanized forces would not foil Milosevic's strategy.

The key lesson, however, for the broader coercive air power debate is not to cast general doubt on air power capabilities or their potential contribution to coercion.

Rather, the Kosovo experience points to the need to assess coercive instruments and their effectiveness within the context of each crisis, including the strategic goals of the adversary and the extent to which its pursuit of those goals is vulnerable to military force.

The prospect of a ground campaign

NATO considered, and took several steps to prepare for, a ground campaign against Serbia, consideration of which featured heavily in the decisionmaking of both NATO and Serbia. General Clark argues that NATO ground troops posed an implicit threat that contributed to Milosevic's decision to capitulate, even though NATO leaders refused to issue any explicit threats of ground assault.[67] Indeed, Milosevic came to terms on the day that President Bill Clinton planned to discuss ground options with his U.S. generals. British Prime Minister Tony Blair pressed openly for a ground war, and many U.S. leaders, including General Clark, called for greater consideration of the option.[68] Several ground options were publicly debated, ranging from a limited push to secure a small enclave for fleeing ethnic Albanians to a large-scale invasion aimed at occupying Serbia and removing the Milosevic regime. Most options involved the risk to Milosevic that NATO would wrest at least a portion of the disputed territory from Serbia with significant numbers of troops.

To some degree, U.S. deployments corroborated the growing rhetoric surrounding possible ground action. The United States moved elements of the 82d Airborne Division and a limited number of ground combat forces to the region; NATO in total deployed some 25,000 troops to Albania and Macedonia and planned to deploy thousands more as part of an ostensible peacekeeping force that could be used for a ground invasion.[69] The United States also shored up roads to support heavy assets and took other limited steps to prepare for ground attacks.[70]

NATO's wielding of the ground threat, however, was uneven and unclear. Many NATO members, including Germany and France, openly opposed any ground deployment. President Clinton and various senior U.S. officials stated repeatedly that they had no plans to use ground forces.[71] At times, Clinton and his advisers took the wind out of their own sails by hinting publicly that the presence of Apache helicopters and other ground assets was meant only as a threat and would never be used.

A decision to use ground forces had not been reached by the end of the air campaign, though by then momentum toward a ground intervention was growing.[72] But its possibility was sufficiently plausible to influence Milosevic's calculus. A ground invasion, even if the preponderance of the evidence available to Milosevic suggested that it was unlikely, threatened to take away the very objective—Serbian control of the Kosovo province—that his policy aimed to hold. Still more frightening to Milosevic, a ground war might have led to the occupation of other parts of Serbia. Serbia's stationing of forces along likely attack routes and efforts to fortify against a ground attack evinced sufficient concern among its leaders that ground threats affected resource allocation decisions.[73]

When more evidence of Serbian decisionmaking emerges, what might it tell us about the broader air power debate? One view would hold that the more influence ground threats had on Serbian decisionmaking, the weaker the claim of air power advocates

that air strikes alone can compel territorial concessions. Air advocates might retort that even if the ground threat mattered, it was still subordinate to coercive air power.

Both of these perspectives fail to understand the synergistic contribution of air power to the threat of ground invasion. In probabilistic terms, the threat of ground war at the outset of the Kosovo crisis carried immense potential costs for Serbia, but its likelihood was small. As the intensity of NATO air attacks increased, however, they enabled NATO potentially to launch a ground campaign at less cost to itself and at more cost to Serbia by softening up Serbian forces before the ground push. In the Gulf War, air attacks did not prompt Saddam Hussein's quick surrender, but they facilitated a coalition rout once the ground assault was launched. Viewing the crisis dynamically, Milosevic's most obvious counter to a NATO ground campaign and the biggest deterrent to its launch—heavy casualties on NATO forces—was far less viable in the face of the air supremacy that NATO would have enjoyed. The previous section emphasized the need to avoid viewing the effects of coercive strategies in absolute, binary terms. The analysis of this section, in turn, demands that independent variables such as "threat of ground invasion" be viewed not in terms of whether the threat existed—even in the face of ardent denials by administration officials, it remained a possibility—but in terms of whether a surge in its probability, made possible by air attacks, contributed to the Serbian decision to capitulate.

Even the Kosovo experience, where air operations were conducted in isolation more than has been typical of modern military campaigns, suggests that air power can be made far more effective when combined with ground forces.[74] Although NATO ground forces did not directly engage Serbian troops, air power's effectiveness increased when combined with ground assets and movements. Army radars from bases in Albania helped pinpoint Serbian artillery, enabling more accurate air strikes.[75] Reports circulated that British Special Forces may have helped direct NATO aircraft when poor weather hindered target identification.[76] Even the KLA's meager force augmented the devastation that air power could inflict. Air forces' effectiveness might have been enhanced still more through ground forces that could effectively reconnoiter, designate targets, assure safe air space for low-flying aircraft, and maneuver Serbian forces into vulnerable terrain. As the U.S. military services continue to progress in thinking jointly, it is critical that the broader air power debate progresses, too, and captures combined effects.

The threat from the KLA

Although Serbian forces' early thrust into Kosovo devastated the KLA, over time the guerrillas grew stronger, portending Milosevic's possible failure to secure Serbian hegemony over Kosovo. Had a potent KLA threat materialized, his terror campaign would have backfired. A popular explanation for Milosevic's eventual willingness to compromise posits that this scenario heavily influenced his calculus.[77] To those seeking to rebut the claims of air power advocates, this explanation has particular appeal because it emphasizes the importance of a ground presence, even if not a NATO one.

After the collapse of the Rambouillet talks, the lightly armed, poorly organized KLA cadres proved no match for the better-armed and -trained Serbian forces that poured

into Kosovo. Ethnic cleansing, however, generated support for the KLA, swelling its ranks with refugee recruits. Albanians from abroad increased their financial support. The KLA began working with U.S. intelligence to locate Serbian forces and, toward the end of the campaign, the KLA began operations against Serbian forces, though with only limited success. Fighting from bases near the Albanian border, the KLA attacked Serbian troops and tried to conduct guerrilla operations throughout Kosovo. In the last weeks of the fighting, the KLA increasingly appeared to coordinate its actions with NATO.

Inside Kosovo itself, NATO air strikes and KLA attacks had synergistic effects. KLA ground offensives drew Serbian forces out of hiding, greatly increasing the lethality of air strikes. NATO aircraft were better able to strike tanks, armored personnel carriers, and artillery pieces as a result of KLA efforts. As one U.S. Army general claimed, "What you had, in effect, was the KLA acting as a surrogate ground force."[78]

The potential for an insurgency or other third-party force to act as a multiplier for coercive threats can be seen in many historical cases, the most recent demonstration being Operation Deliberate Force, the NATO campaign against Bosnian Serb forces in 1995 that contributed to the Serb leadership's decision to enter negotiations at Dayton. For several years, the Bosnian Serbs had ignored United Nations and NATO ultimatums. NATO's September 1995 air strikes on Bosnian Serb forces occurred in conjunction with Croat and Muslim successes on the battlefield, particularly the Croat offensives against the Serbs in western Slavonia and in the Krajina. The strikes not only hurt the Bosnian Serbs directly, but they also posed the risk that Bosnian Muslim and Croat forces would make further advances at the Serbs' expense.[79] U.S. strikes that by themselves imposed only limited damage proved tremendously potent because they complemented the local military balance and exposed vulnerabilities in Serb defensive capabilities.[80]

The relative success of Operation Deliberate Force may have inflated the expectations of policymakers who assumed Milosevic would back down quickly in the face of air attacks over the Kosovo issue. This time, however, available evidence suggests that KLA successes had only marginal effects on the Serbian decision to negotiate. The KLA, despite having gained strength by the end of Operation Allied Force, still had not defeated the Serbian army in battle and had at best limited control over territory inside Kosovo. (Note that in Bosnia in 1995, the Serbs faced not an insurgency but, for the most part, regular forces; in Croatia, too, it was regular army units that launched offensives in the Krajina and western Slavonia.) Although information is scarce as to whether the growing strength of the KLA played into Milosevic's decision to capitulate, at the time he gave in the KLA posed no immediate threat to Serbian control over the province. Moreover, Belgrade had sounded out Russian and other mediators on the possibility of a settlement before the latest round of targeting successes in June, implying that Milosevic was already seriously considering capitulation.[81] Finally, the concessions Milosevic accepted—in essence the complete removal of his forces from Kosovo—were far more than what the KLA could have accomplished anytime soon, even with NATO air support.

The Kosovo experience illustrates some of the difficulties of exploiting insurgent threats facing an adversary. Operationally, coordination with the KLA proved difficult.

Although KLA operations forced Serbian troops out of hiding, the KLA could not sustain anything near the intensity that even a relatively small NATO ground force would have. The KLA could not integrate air operations into its ground attacks or otherwise help coordinate air strikes in more than an ad hoc manner. On a political level, the KLA was an unattractive ally, with many of its leaders linked to undemocratic ideologies and the drug trade.[82] NATO's goal of creating regional stability also required that the KLA's strength not swell so much that it undermined post-operation political settlement efforts.

As is true with respect to the threat of ground invasion, the important insight for the broader air power debate is not whether the insurgents' ground presence was a decisive factor in this particular crisis, but under what conditions such a presence can contribute to coercion. Despite its limited impact on Milosevic in 1999, air power can be particularly effective in shifting the local balance of forces, leaving an adversary vulnerable to another external adversary. By interdicting the flow of men and arms to the front, air power can greatly enhance rivals' offensive power. Strikes on command-and-control facilities, as in Operation Deliberate Force, can hinder a foe's efforts to coordinate defenses against a rival. And the establishment and maintenance of "no-fly zones" can deprive one side of command of the air, often-times removing a critical element of its military prowess. In ways such as these, the use of air power, coordinated to exploit third-party threats, can not only threaten to impose immediate costs on an adversary, but can threaten to deny it benefits from resistance.

The experience of Bosnia revealed, and that of Kosovo corroborated in its converse, that magnifying a ground threat, even one not part of the coercing power's forces, is a potent source of coercive leverage. Such a strategy, however, requires a rare, preceding condition: the existence of a *viable* indigenous or allied force that the coercing power can support.

Serbia's inability to inflict costs on NATO

By viewing coercion dynamically, as chess-like contests of move and counter-move, it becomes clear that successful coercion requires not only effective threats, but also the neutralization of adversary responses.[83] By threatening to impose costs on a coercer, an adversary may be able to turn the tables and force the coercing power to back down. Inflicting costs back on the coercer is also important for psychological reasons, allowing the adversary leadership to demonstrate to its followers that they are not alone in suffering. Like past opponents, Serbia tried at least three strategies for imposing costs on NATO: creating casualties; fostering sympathy through its own suffering; and disrupting NATO cohesion. Serbia's inability to inflict costs—particularly its failure to gain Russian support—prevented it from defeating the NATO coercion effort and decreased its ability to shore up popular morale.

To varying degrees, the use of air power helped prevent Serbia from successfully propagating these counter-strategies, a major factor in the overall qualified success of coercion. This "explanation" would not account for Milosevic's capitulation on its own because neutralizing the counter-strategies imposed no direct costs by itself.

But it is as important an explanation as the others considered above because negating counter-coercive strategies fortified the credibility of NATO threats: Milosevic realized that he could not escape the other costs being imposed upon his regime without conceding.[84]

Imposing casualties

A potentially fruitful means of countering U.S. coercion appears to be by killing or credibly threatening U.S. soldiers. Although a number of empirical studies have shown that the effects of U.S. casualties on public support depend heavily on other variables and contextual factors—for example, support is likely to erode with casualties when the public views victory as unlikely or when vital U.S. interests are not at stake—this sensitivity affects policy and planning decisions both prior to and during operations, when concern for potentially adverse public reactions weighs strongly.[85]

Adversaries often view casualty sensitivity as the United States' "center of gravity" and adopt their strategies accordingly. Ho Chi Minh famously warned the United States: "You can kill ten of my men for every one I kill of yours. But even at those odds, you will lose and I will win."[86] Somali militia leader Mohammed Farah Aideed echoed this view to U.S. Ambassador Robert Oakley: "We have studied Vietnam and Lebanon and know how to get rid of Americans, by killing them so that public opinion will put an end to things."[87] Even if these perceptions misunderstand U.S. politics, coupling them with a belief that U.S. forces are vulnerable may be enough to cause an adversary to hold out.

Milosevic appears to have shared previous estimations that American political will would erode as U.S. casualties mounted. As he noted in an interview, NATO is "not willing to sacrifice lives to achieve our surrender. But we are willing to die to defend our rights as an independent sovereign nation."[88] Rhetorically embellished as this statement may be, Milosevic probably perceived NATO's will to sustain operations in the face of casualties to be weak.[89]

Propagandizing collateral damage

Recent conflicts have highlighted U.S. decisionmakers' concern not only with potential U.S. casualties but with the deaths or suffering of enemy civilians, which policymakers worry can contribute to the breakdown of domestic or allied support for an operation. Toward the end of Operation Desert Storm, Saddam dramatized before the media Iraqi civilian deaths resulting from a U.S. intelligence failure—U.S. aircraft had struck the al-Firdos bunker, which was thought to house command-and-control facilities but was instead used at the time as a bomb shelter—hoping to play on the West's humanitarian sentiments and create a backlash in the United States and among its allies. Although this effort failed to disrupt the entire campaign or even to generate sympathy among the American people, it did lead U.S. commanders to curtail the air strikes on Baghdad.[90]

Some coalition partners may be more sensitive than the United States to civilian injuries resulting from military operations, and planners must at times design operations to

fall within the political constraints of the most sensitive members. During the early phases of Operation Allied Force, most major targets were scrutinized by representatives of a number of allied capitals. To strike politically sensitive targets, General Clark required authorization from the Joint Staff in the Pentagon, which in turn passed decisions on major targets up to the defense secretary and ultimately the president.[91] Some European allies resisted escalated air attacks that would endanger civilians, and NATO officials also scrutinized the target list to comply with international legal proscriptions.[92]

Serbia tried to undermine allied support for the air war by propagandizing collateral damage. Belgrade publicized the deaths of Serb and Albanian civilians resulting from tragic target misidentifications or errant bombs, trying to capitalize on NATO's humanitarian conscience.[93] Milosevic's efforts to exploit collateral damage failed to erode significantly U.S. or allied support for the operation. It did, however, result in the short-term tightening of targeting restrictions on NATO bombers: in April, for instance, NATO modified its procedures to require that U.S. pilots receive authorization before striking military convoys, after a U.S. warplane mistakenly hit a refugee convoy.[94]

Disrupting NATO unity

Coalition members often have diverse goals or different preferences, leading the coalition as a whole to adopt positions that may reflect the "lowest common denominator" rather than more assertive positions. Coalitions sometimes have difficulty escalating their threats because diplomats must accede to restrictive operation mandates or rules of engagement as the price of allied cohesion.[95]

Exploiting coalition fissures offers adversaries an enticing counter-coercive strategy, as an alternative or adjunct to combating threats of force directly. Saddam Hussein attempted to widen coalition splits at several key junctures in the Gulf crisis and its aftermath, in an effort to undermine the threat of escalation against Iraq. Prior to the coalition ground assault, his attempted negotiations with the Soviet Union not only nearly averted war but also caused some coalition members to question the need for military action. Iraq simultaneously tried to dislodge Arab support for coalition operations by linking resolution of the Kuwaiti crisis to the Arab-Israeli dispute, thereby driving a wedge between the Arab states and the U.S.-Israeli axis.

Like Saddam, Milosevic appears to have believed that he could outlast the coalition arrayed against him. Diplomatic rifts among NATO partners and public disagreement over strategy likely contributed to his defiance by fostering his beliefs that NATO unity would collapse. Greece and Italy opposed an extended bombing campaign and pushed for limits on the damage inflicted, France resisted plans for a naval blockade, and Germany opposed any consideration of ground options.[96] But toward the end of the campaign, Milosevic's hopes of disrupting NATO unity seem to have evaporated, as the allies' momentum shift toward possible ground assault signaled greater cohesion than expected. In addition, the air campaign actually intensified as time went on, further diminishing hopes that NATO's own disagreements would collapse the coercion effort.[97]

Air power and counter-counter-coercion

Several of air power's attributes allow coercers to defend against common counter-coercive strategies, such as those just outlined. An understanding of these contributions, and their limits, is critical to assessing air power as a coercive instrument. These issues, however, are frequently put aside in air power debates because participants focus on actual damage inflicted and observed behavior, ignoring what an adversary is *unable* to do in response.

The most publicized advantage of air power in restricting adversary countermoves is the relative invulnerability of U.S. aircrews compared with that of engaged ground forces. By reducing force vulnerability, reliance on air power can help sustain robust domestic support by lowering the likelihood of U.S. casualties. At the same time, air power's ability to conduct precision operations can reduce concerns about adversary civilian suffering (though efforts to keep air forces relatively safe may create moral and legal concerns if doing so places civilians at much greater risk).[98] Both of these attributes of air power—relatively low force vulnerability and high precision—can also fortify coalition unity, which is itself susceptible to disruptions as friendly casualties and collateral damage mount.

These potential advantages of air power over other instruments were largely borne out in the Kosovo experience. Serbia inflicted zero NATO casualties, an amazing figure given the length and extent of the air campaign. Although NATO air strikes did lead to the deaths of innocents, collateral damage was sufficiently contained that domestic and international support remained steady.[99]

The advantages that air power offers in negating adversary counter-strategies are not cost-free, and there are typically trade-offs among them. To evade Serbian air defenses, NATO aircraft flew at medium or high altitudes (often 15,000 feet), therefore increasing the risk of collateral damage. Maintaining necessary levels of precision and force protection comes at the price of military effectiveness and overall cost, as alternatives that entail greater risk or fewer forces are shelved.[100] Appreciation of these trade-offs is critical; analysts must resist the temptation to compare coercive instruments only in terms of manifest effects, because the manifest destructive impact of coercive strikes is but one side of the equation.

While air power is well suited against some counter-strategies, those outlined in this section are only three of many. Adversaries also, for instance, try to impose costs and counter-coerce through nonmilitary means. If an adversary can forge a new alliance with a foe of the coercing power or otherwise raise the stakes, it can often succeed in halting a coercion campaign.

Serbia failed to gain Russian support for its cause, which likely played a key role in Milosevic's decision to concede. Had Serbia won strong Russian support, it would have gained a means of resistance and diplomatic escalation. The price to NATO of continued war in Kosovo would have meant alienating a great power on the edge of Europe. Initially, Russia pressed NATO to end the bombing as a prelude to a diplomatic settlement, and, even in late May, Russia publicly touted its opposition to NATO.[101] Although evidence is not available, Milosevic probably looked at Russia's rhetorical support and condemnation of the NATO campaign as an indication that Moscow would champion

Belgrade's cause in the international arena. But while Russia opposed NATO's air war and complicated the subsequent occupation of Kosovo, it never sided firmly with Serbia. Russian envoy Viktor Chernomyrdin even acted as NATO's de facto envoy, pressing Milosevic to yield to NATO.[102] The timing of Milosevic's capitulation suggests the importance of this factor: NATO had long offered similar conditions to those ultimately accepted by Milosevic, but Russia's lack of support had not been clear until this point. Lieut. Gen. Michael Jackson, NATO's commander in Kosovo, concluded that Russia's decision to back NATO's position on June 3 "was the single event that appeared to me to have the greatest significance in ending the war."[103]

We emphasize Milosevic's failed efforts to exploit Russian sympathy because, unlike other counter-coercive strategies such as imposing U.S. casualties, there is little that air power or any other military instrument can do to neutralize such efforts.[104] Russia's unwillingness (or inability) to help Belgrade was a product of Moscow's own limits and Serbia's unattractiveness as an ally, not factors shaped by air power. The diplomatic importance of Russia in ending the conflict, of course, must also be seen in context. Without the constant battering of the air campaign, Russia's pressure on Belgrade probably would have accomplished little.

Kosovo and the future use of air power

As frequently happens in the aftermath of U.S. air operations, participants at both poles of the air power debate claimed vindication from Kosovo. But the key lesson of the Kosovo crisis is that neither side of this debate is, or can be, correct. This conclusion will strike many readers as unsatisfying because it urges participants to take several steps backward and reassess the terms of the debate rather than move forward and resolve it based on new data. The methodological propositions advanced in this article, however, should guide analysis of any instrument of coercion, whether military, economic, or diplomatic.

When weighing the balance of ground and air forces (as well as the type of air forces needed), policymakers must consider not only what they seek to accomplish through coercion, but also what they seek to prevent. As the Kosovo contest attests, air power's and other instruments' greatest accomplishments are often what they preclude an adversary from doing. The role air power can play, for example, in stopping an adversary from shattering a coalition or generating domestic opposition in the United States has value beyond the damage if inflicts. In the future, adversaries will develop new counters, both political and military, and air power may be of only limited value in stymieing these. Anticipating counter-strategies, and planning accordingly, is essential.

Finally, policymakers and military officials must recognize when reliance on air power may undermine U.S. and allied credibility. Use of air power can help sustain domestic support or coalition unity, but it cannot eliminate underlying political constraints. In Eliot Cohen's words, "Air power is an unusually seductive form of military strength, in part because, like modern courtship, it appears to offer gratification without commitment."[105] This view poses a challenge for air power. Because policymakers often see air strikes as a low-risk, low-commitment measure, air power will be called on when U.S. public or allied commitment is weak—a situation that will make successful coercion far

harder when casualties do occur or when air strikes fail to break adversary resistance. Air power, like other military instruments, cannot overcome a complete lack of political will. Policymakers' use of coercive air power under inauspicious conditions and in inappropriate ways diminishes the chances of using it elsewhere when the prospects of success would be greater.

Notes

1 See Giulio Douhet, *The Command of the Air* (Washington, D.C.: Office of Air Force History, 1942). Works by other visionaries include H.H. Arnold and Ira C. Eaker, *Winged Warfare* (New York: Harper, 1941); and William M. Mitchell, *Winged Defense* (New York: G.P. Putnam's Sons, 1925). Much of the early debate over how best to use air power took place inside various air forces. For useful overviews of this history, see Robert Futrell, *Ideas, Concepts, Doctrine: Basic Thinking in the United States Air Force* (Maxwell Air Force Base, Ala.: Air University Press, 1989); and Phillip S. Meilinger, ed., *The Paths to Heaven: The Evolution of Airpower Theory* (Maxwell Air Force Base, Ala.: Air University Press, 1997).

2 Quoted in Craig R. Whitney, "Air Wars Won't Stay Risk Free, General Says," *New York Times*, June 18, 1999, p. A8. Gen. Michael J. Dugan, a former U.S. Air Force chief of staff, declared: "For the first time in history—5,000 years of history of man taking organized forces into combat—we saw an independent air operation produce a political result." Quoted in James A. Kitfield, "Another Look at the Air War That Was," *Air Force Magazine* (October 1999), p. 40.

3 Quoted in John Diamond, "Air Force Strategists Fight Overconfidence Built by Air Victory," *European Stars and Stripes*, July 4, 1999, p. 1.

4 The lessons drawn by both sides of this debate are outlined in Nick Cook, "War of Extremes," *Jane's Defence Weekly*, July 7, 1999, pp. 20–23. See also John D. Morrocco, "Kosovo Conflict Highlights Limits of Airpower and Capability Gaps," *Aviation Week & Space Technology*, May 17, 1999, pp. 31–33.

5 Clifford Beal, "Lessons from Kosovo," *Jane's Defence Weekly*, July 7, 1999, p. 20. One retired U.S. Army general fears that "the strategic relevancy and future of our Army have suffered a grave blow from the Kosovo experience." See Robert F. Wagner, "In Kosovo, the Army's Guns Were Silent and Forgotten," *Army Times*, July 12, 1999, p. 46. Various assessments of the bombing campaign, including its successes and limits, are summarized in Bradley Graham, "Air vs. Ground: The Fight Is On," *Washington Post*, June 22, 1999, p. A1; and Tim Butcher and Patrick Bishop, "Nato Admits Air Campaign Failed," *London Daily Telegraph*, July 22, 1999, p. 1.

6 The leading academic work on the use of air power as a coercive instrument is Robert A. Pape, *Bombing to Win* (Ithaca, N.Y.: Cornell University Press, 1996). See also Pape's works "The Air Force Strikes Back: A Reply to Barry Watts and John Warden," *Security Studies*, Vol. 7, No. 2 (Winter 1997/98), pp. 200–214; and "The Limits of Precision-Guided Air Power," *Security Studies*, Vol. 7, No. 2 (Winter 1997/98), pp. 93–114. For the best critique of Pape, see Karl Mueller, "Denial, Punishment, and the Future of Air Power," *Security Studies*, Vol. 7, No. 3 (Spring 1998), pp. 182–228. Other valuable works on the use of air power include Eliot A. Cohen, "The Mystique of U.S. Air Power," *Foreign Affairs*, Vol. 73, No. 1 (January/February 1994), pp. 109–124; Stuart Peach, ed., *Perspectives on Air Power* (London: Her Majesty's Stationery Office, 1998); Meilinger, *Paths to Heaven*; and Phillip S. Meilinger, *Ten Propositions Regarding Air Power* (Washington, D.C.: Air Force History and Museums Program, 1995).

7 A collection of military publications on joint operations can be found at http://www.dtic.mil/jcs.

8 In this respect, contemporary theory resembles that of air power pioneers, such as Giulio Douhet, Hugh Trenchard, and William (Billy) Mitchell. Their modern-day heirs, such as John Warden, Harian Ullman, and James Wade, also focus on air power's exclusive contributions, and have been properly criticized for making excessive claims. See John Warden, "Employing Air Power in the Twenty-first Century," in Richard Shultz, Jr., and Robert L. Pfaltzgraff, Jr., eds., *The Future of Air Power in the Aftermath of the Gulf War* (Maxwell Air Force Base, Ala.: Air University Press, 1992), pp. 57–82; John Warden, "Success in Modern War," *Security Studies*, Vol. 7, No. 2 (Winter 1997/98), pp. 172–190; and Harlan K. Ullman and James P. Wade, *Shock and Awe: Achieving Rapid Dominance* (Washington, D.C.: National Defense University, 1996). This focus of these scholars, however,

largely ignores far more important developments such as the air-land battle and joint doctrine, which dictate how air power is most likely to be used in actual war.

9 These issues are elaborated in Daniel L. Byman, Matthew C. Waxman, and Eric Larson, *Air Power as a Coercive Instrument* (Santa Monica, Calif.: RAND, 1999).

10 As Gen. Wesley Clark noted when asked why Serbian forces withdrew, "You'll have to ask Milosevic, and he'll never tell you." Quoted in Michael Ignatieff, "The Virtual Commander," *New Yorker*, August 2, 1999, p. 31.

11 Quoted in Dana Priest, "The Commanders' War: The Battle inside Headquarters," *Washington Post*, September 21, 1999, p. A1.

12 Among the most widely cited works on coercion are those of Thomas C. Schelling and Alexander L. George and William E. Simons. See especially Schelling, *Arms and Influence* (New Haven, Conn.: Yale University Press, 1966); and George and Simons, eds., *The Limits of Coercive Diplomacy* (Boulder, Colo.: Westview, 1994). Other valuable works include Patrick M. Morgan, "Saving Face for the Sake of Deterrence," in Robert Jervis, Richard Ned Lebow, and Janice Gross Stein, eds., *Psychology and Deterrence* (Baltimore, Md.: Johns Hopkins University Press, 1985), pp. 125–152; John J. Mearsheimer, *Conventional Deterrence* (Ithaca, N.Y.: Cornell University Press, 1983); Jonathan Shimshoni, *Israel and Conventional Deterrence: Border Warfare from 1953 to 1970* (Ithaca, N.Y.: Cornell University Press, 1988); Uri Bar-Joseph, "Variations on a Theme: The Conceptualization of Deterrence in Israeli Strategic Thinking," *Security Studies*, Vol. 7, No. 3 (Spring 1998), pp. 145–181; Elli Lieberman, "What Makes Deterrence Work?: Lessons from the Egyptian-Israeli Enduring Rivalry," *Security Studies*, Vol. 4, No. 4 (Summer 1995), pp. 833–892; and Daniel Ellsberg, "Theory and Practice of Blackmail," P-3883 (Santa Monica, Calif.: RAND, 1968).

13 We use this particular definition to emphasize that coercion relies on the threat of future military force to influence adversary decisionmaking, but that limited uses of actual force may form key components of coercion. Limited uses of force sway adversaries not only because of their direct destructive impact but because of their effects on an adversary's perceptions of future force and the adversary's vulnerability to it. There are, to be sure, many types of coercive pressure (sanctions, diplomatic isolation, etc.); unless specified otherwise, we use the term "coercion" to mean *military* coercion.

14 Schelling, *Arms and Influence*, p. 3.

15 Pape, *Bombing to Win*, p. 13 (emphasis added).

16 In addition to Schelling's work, a rationalist, cost-benefit approach is employed in many other major works on coercion, including Bruce Bueno de Mesquita, *The War Trap* (New Haven, Conn.: Yale University Press, 1981); and Christopher H. Achen and Duncan Snidal, "Rational Deterrence Theory and Comparative Case Studies," *World Politics*, Vol. 41, No. 2 (January 1989), pp. 143–169.

17 Pape, *Bombing to Win*, pp. 15–16.

18 Pape examines this issue briefly in his discussion of why Germany did not surrender before May 1945. See ibid., p. 256, especially n. 4. This point is also implicit in Pape's discussion of how adversaries offset coercive pressure. For a summary, see ibid., p. 24.

19 For an assessment of such strategies, see Daniel L. Byman and Matthew Waxman, "Defeating U.S. Coercion," *Survival*, Vol. 41, No. 2 (Summer 1999), pp. 107–120.

20 These points are discussed in Karl Mueller, "Strategy, Asymmetric Deterrence, and Accommodation," Ph.D. dissertation, Princeton University, 1991, chap. 1; and John Mueller, *Quiet Cataclysm: Reflections on the Recent Transformation of World Politics* (New York: HarperCollins, 1995), chap. 4.

21 R.J. Overy, *Why the Allies Won* (New York: W.W. Norton, 1995), p. 133.

22 Pape, *Bombing to Win*, pp. 141–142.

23 See Robert F. Futrell, *The United States Air Force in Korea, 1950–1953*, rev. ed. (Washington, D.C: Office of Air Force History, 1983), for a detailed account of the air campaign in Korea. A superb account of Chinese decisionmaking is Bin Yu, "What China Learned from Its 'Forgotten War' in Korea," *Strategic Review*, Vol. 26, No. 3 (Summer 1998), pp. 4–16.

24 As Barry Watts argues, mapping coercion to binary rankings is highly reductionist and wrongly assumes that complex campaigns can be reduced to zero or one. Watts, "Theory and Evidence in Security Studies," *Security Studies*, Vol. 7, No. 2 (Winter 1997/98), p. 136.

25 The use of these binary metrics of success stems largely from measurement concerns. If we wish to test certain hypotheses about coercion by correlating success with independent variables (such as type of force used or type of adversary assets threatened), then we would like to code as many cases

as possible. A binary coding of success avoids the messy gray area into which many cases might fall if a nonabsolute measure were used.

26 Lawrence Freedman and Efraim Karsh, *The Gulf Conflict, 1990–1991* (Princeton, N.J.: Princeton University Press, 1993), pp. 380–385.

27 Janice Gross Stein, "Deterrence and Compellence in the Gulf, 1990–91: A Failed or Impossible Task?" *International Security*, Vol. 17, No. 2 (Fall 1992), pp. 147–179.

28 For an example of the binary coding of success or failure, see Walter J. Peterson, "Deterrence and Compellence: A Critical Assessment of Conventional Wisdom," *International Studies Quarterly*, Vol. 30, No. 3 (September 1986), pp. 269–294.

29 See Janice Gross Stein, "The Arab-Israeli War of 1967: Inadvertent War through Miscalculated Escalation," and Yaacov Bar-Siman-Tov, "The War of Attrition, 1969–1970," in Alexander L. George, ed., *Avoiding War: Problems of Crisis Management* (Boulder, Colo.: Westview, 1991), pp. 126–159 and pp. 320–341, respectively.

30 R.W. Apple, Jr., "A Fresh Set of U.S. Goals," *New York Times*, March 25, 1999, p. A1. See also Barton Gellman, "Allies Facing the Limits of Air Power," *Washington Post*, March 28, 1999, p. A1. General Clark described NATO goals as "the Serbs out; NATO in; the refugees home; a ceasefire in place; and a commitment to work for a peace settlement." See "Interview: General Wesley Clark," *Jane's Defence Weekly*, July 7, 1999, p. 40.

31 Statement Issued at the Extraordinary Ministerial Meeting of the North Atlantic Council, NATO Headquarters, Brussels, April 12, 1999, http://www.nato.int/docu/pr/1999/p99-051e.htm (visited August 8, 1999); and Statement on Kosovo Issued by the Heads of State and Government Participating in the Meeting of the North Atlantic Council in Washington, D.C., April 23–24, 1999, http://www.nato.int/docu/pr/1999/p99-062e.htm (visited August 8, 1999).

32 Another goal—deterring future Serbian aggression—cannot be judged as of this writing.

33 Joseph S. Nye, Jr., "Redefining the National Interest," *Foreign Affairs*, Vol. 78, No. 4 (July/August 1999), p. 34; and Peter W. Rodman, "The Fallout from Kosovo," ibid., pp. 45–51.

34 Matthew Kaminski and John Reed, "KLA Played Key Role in Allied Air War," *Wall Street Journal*, July 6, 1999, p. A11. A Joint Chiefs of Staff spokesman declared, "We're satisfied we destroyed enough stuff to get him to say uncle." Quoted in Steven Lee Meyers, "Damage to Serb Military Less than Expected," *New York Times*, June 28, 1999, p. A1. Some of the arguments for and against this view are summarized in Butcher and Bishop, "Nato Admits Air Campaign Failed," p. 1.

35 The June 10, 1999, Department of Defense briefing indicated that NATO had destroyed all of Yugoslavia's petroleum refining capability; most of its ammunition production capacity; 40 percent of its armored vehicle production; 100 percent of the rail bridges into Kosovo; and 45 percent of its TV broadcast capability. See Anthony Cordesman, "The Lessons and Non-Lessons of the Air and Missile War in Kosovo," July 27, 1999, http://www.csis.org (visited on August 3, 1999), p. 79; Meyers, "Damage to Serb Military Less than Expected," p. A1; and Eric Schmitt and Michael R. Gordon, "Shift in Targets Lets NATO Jets Tip the Balance," *New York Times*, June 5, 1999, p. 1. General Clark received authorization to go after a wider range of targets at the end of March, after several weeks of limited strikes. Ignatieff, "The Virtual Commander," p. 32.

36 Priest, "The Commanders' War: The Battle inside Headquarters."

37 Michael R. Gordon, "NATO Plans Weeks of Bombing to Break Grip of Serb Leader," *New York Times*, April 1, 1999, p. A1.

38 Steven Erlanger, "NATO Attack Darkens City and Areas of Serbia," *New York Times*, May 3, 1999, p. A13. John Warden has postulated: "Unless the stakes in the war are very high, most states will make desired concessions when their power-generation system is put under sufficient pressure or actually destroyed." Warden, "The Enemy as a System," *Air Power Journal*, Vol. 9, No. 1 (Spring 1995), p. 49.

39 See Mohammed Ayoob, "The Security Problematic of the Third World," *World Politics*, Vol. 43, No. 2 (January 1991), pp. 257–283; and Stephen David, *Choosing Sides: Alignment and Realignment in the Third World* (Baltimore, Md.: Johns Hopkins University Press, 1991).

40 Japan, for example, needlessly deployed air assets for homeland defense in December 1942 and overextended its naval forces to demonstrate that it was acting forcefully after the first U.S. bombing of Japan. For two superb analyses of World War II and the importance of adversary reactions (and overreactions) to Allied bombing, see James G. Roche and Barry D. Watts, "Choosing Analytic Measures," *The Journal of Strategic Studies*, Vol. 14, No. 2 (June 1991), pp. 165–209; and Overy, *Why the Allies Won*, pp. 101–133.

41 Trevor N. Dupuy, *Elusive Victory* (Dubuque, Iowa: Kendall Hunt, 1992), p. 372; and Shimshoni, *Israel and Conventional Deterrence*, p. 16.

42 See Daniel L. Byman, Kenneth Pollack, and Matthew Waxman, "Coercing Saddam Hussein: Lessons from the Past," *Survival*, Vol. 40, No. 3 (Autumn 1998), pp. 127–151.

43 In early 1997, Milosevic reinstated opposition municipal election victories after massive protest rallies threatened to expose weaknesses in his regime. See Dean E. Murphy, "Yugoslav Protesters Walk Fine Line," *Los Angeles Times*, February 8, 1997, p. A5; and Rod Nordland, "End of the Road," *Newsweek*, February 17, 1997, p. 26. For general accounts of Milosevic's concern with political support, see Franklin Foer, "Slobodan Milosevic: How a Genocidal Dictator Keeps Getting Away with It," *Slate*, June 20, 1998, http://www.slate.com; and Misha Glenny, *The Fall of Yugoslavia* (New York: Penguin, 1993), pp. 32–33, 60–70. An account of Milosevic as a diplomatic tactician can be found in Richard Holbrooke, *To End a War* (New York: Random House, 1998).

44 Gordon, "NATO Plans Weeks of Bombing."

45 Press reporting that NATO strikes increased Milosevic's popularity with the army in Serbia appear in retrospect to have been erroneous. See Steven Brill, "War Gets the Monica Treatment," *Brill's Content* (July/August 1999), pp. 103–104.

46 Ibid., pp. 104–105.

47 James M. Dorsey, "Montenegro Girds against Attempt by Milosevic to Topple Government," *Wall Street Journal*, April 5, 1999, p. 1; and Michael Dobbs, "Montenegro Easing Away from Serb Ally," *Washington Post*, June 25, 1999, p. A1.

48 Roche and Watts, "Choosing Analytic Measures," p. 182; and Stephen T. Hosmer, *Psychological Effects of U.S. Air Operations in Four Wars* (Santa Monica, Calif.: RAND, 1996), p. 196.

49 For various works on the psychological impact of bombing, see Hosmer, *Psychological Effects of U.S. Air Operations in Four Wars*; Mark Clodfelter, *The Limits of Air Power: The American Bombing of North Vietnam* (New York: Free Press, 1989); and Futrell, *The United States Air Force in Korea*. See also *U.S. Strategic Bombing Survey: The Effects of Strategic Bombing on German Morale* (Washington, D.C.: U.S. Government Printing Office, December 1946), in David MacIsaac, ed., *The United States Strategic Bombing Survey*, Vol. 4 (New York: Garland, 1976).

50 An excellent account of the air campaign in Chechnya and the Chechen response is Benjamin S. Lambeth, "Russia's Air War in Chechnya," *Studies in Conflict and Terrorism*, Vol. 19, No.4 (October 1996), pp. 365–388. On Somalia, see John Drysdale, "Foreign Military Intervention in Somalia," in Walter Clarke and Jeffrey Herbst, eds., *Learning from Somalia* (Boulder, Colo.: Westview, 1997), p. 118.

51 The resilience of police states in the face of wartime hardships was a key finding of the U.S. Strategic Bombing Survey of World War II air operations against Germany. See Clodfelter, *The Limits of Air Power*, p. 9.

52 When coercive operations threaten to foster instability, whether wittingly or unwittingly, target regimes often are well prepared to respond. If widespread domestic unrest appears likely, regimes will increase the police presence, use mass arrests, and even slaughter potential opposition members to preserve their power. Milosevic, for example, has constructed an extensive police state to resist both internal and external pressure. Susan L. Woodward, *Balkan Tragedy* (Washington, D.C.: Brookings, 1995), p. 293.

53 A denial strategy at times blurs with "brute force," as both usually seek to defeat an adversary's military, but coercive "denial" focuses on convincing an adversary that future benefits will not be gained, while more conventional war fighting focuses on physically stopping an adversary regardless of whether its leadership believes it can fight on.

54 Pape, "The Limits of Precision-Guided Air Power," p. 97.

55 Quoted in Cordesman, "The Lessons and Non-Lessons of the Air and Missile Campaign in Kosovo," p. 94.

56 Quoted in John A. Tirpak, "Short's View of the Air Campaign," *Air Force Magazine* (September 1999), p. 43. General Short believed that the focus of the air campaign should be strategic targets in Serbia proper.

57 Cordesman, "The Lessons and Non-Lessons of the Air and Missile Campaign in Kosovo," figs. 18, 19, 20.

58 Ibid., p. 118.

59 Glenny, *The Fall of Yugoslavia*, pp. 32–33; and Woodward, *Balkan Tragedy*, pp. 7, 133.

60 Pape, *Bombing to Win*, p. 30.

61 Thomas A. Keaney and Eliot A. Cohen, *Gulf War Air Power Survey Summary Report* (Washington, D.C.: Government Printing Office, 1993), p. 109.

62 Mark Clodfelter argues that air power was ineffective when North Vietnam employed a guerrilla strategy, but was effective when North Vietnam used conventional military operations: "Because of revamped American political objectives and the North's decision to wage conventional war, Linebacker proved more effective than Rolling Thunder in furthering U.S. goals in Vietnam." Clodfelter, *The Limits of Air Power*, p. 148. See also Pape, *Bombing to Win*, pp. 193–194. Analyses of the Israeli experience can be found in Martin van Creveld with Steven L. Canby and Kenneth S. Brower, *Air Power and Maneuver Warfare* (Maxwell Air Force Base, Ala.: Air University Press, 1994), pp. 153–192; Dupuy, *Elusive Victory*; and Edgar O'Balance, *No Victor, No Vanquished: The Yom Kippur War* (London: Barrier and Jenkins, 1979).

63 Cordesman, "The Lessons and Non-Lessons of the Air and Missile Campaign in Kosovo," p. 95. After the war, many NATO commanders concluded that the Yugoslav 3d Army could have held out for a considerable length of time despite NATO air attacks. See Dana Priest, "The Commanders' War: The Plan to Invade Kosovo," *Washington Post*, September 19, 1999.

64 As of this writing, data on actual Serbian losses are limited. Press reports suggest that NATO may have overestimated the initial damage it inflicted. Figures released by General Clark in September 1999 indicate that allied strikes destroyed or damaged roughly one-third of the Serbian army's weaponry and vehicles in Kosovo. Priest, "The Commanders' War: The Battle inside Headquarters." The initial baseline of Serbian forces in Kosovo is not known at this time, however, making actual losses very difficult to discern.

65 Kaminski and Reed, "NATO Link to KLA Rebels."

66 For ways to improve this capability, see Alan Vick, David T. Orletsky, John Bordeaux, and David A. Shlapak, *Enhancing Airpower's Contribution against Light Infantry Targets* (Santa Monica, Calif.: RAND, 1996).

67 "Interview: General Wesley Clark."

68 National Security Advisor Samuel Berger also authorized General Clark to examine various ground options. Priest, "The Commanders' War: The Plan to Invade Kosovo."

69 Carla Anne Robins and Thomas E. Ricks, "NATO Weighs Plan for Bigger Kosovo Force," *Wall Street Journal*, May 19, 1999; and Schmitt and Gordon, "Shift in Targets." The deployment of Apache helicopters may have been in part intended to convince Milosevic of the plausibility of a ground invasion. Ignatieff, "The Virtual Commander," p. 33.

70 Priest, "The Commanders' War: The Plan to Invade Kosovo."

71 Apple, "A Fresh Set of U.S. Goals."

72 Robbins and Ricks, "NATO Weighs Plan for Bigger Kosovo Force"; Thomas E. Ricks, David Rogers, and Carla Anne Robbins, "NATO to Reconsider the Issue of Ground Troops in Kosovo," *Wall Street Journal*, April 21, 1999; and Rowan Scarborough, "Apaches Were Sent to Scare Serbs," *Washington Times*, May 21, 1999, p. 1.

73 Michael R. Gordon, "NATO Says Serbs, Fearing Land War, Dig In on Border," *New York Times*, May 19, 1999, p. 1.

74 See Thomas A. Keaney, "The Linkage of Air and Ground Power in the Future of Conflict," *International Security*, Vol. 22, No. 2 (Fall 1997), pp. 147–150.

75 Joseph Fitschett, "NATO Misjudged Bombing Damage," *International Herald Tribune*, June 23, 1999, p. A1.

76 Michael Evans, "SAS 'On the Ground in Kosovo,'" *London Times*, April 13, 1999.

77 See Cordesman, "The Lessons and Non-Lessons of the Air and Missile War in Kosovo," p. 6.

78 Quoted in Graham, "Air vs. Ground," p. A1. See also Fitschett, "NATO Misjudged Bombing Damage," p. A1. One of NATO's most effective strikes occurred on June 7, shortly before Milosevic capitulated, when B-52 bombers caught Serbian soldiers exposed on an open plain and may have killed several hundred—strikes that owed their success in part to KLA operations and intelligence. Kaminski and Reed, "NATO Link to KLA Rebels." NATO, however, sought to avoid serving as the KLA's air force and denied it communication equipment to serve as forward air controllers to call in strikes.

79 One post-Operation Deliberate Force analysis concluded: "Hitting communication nodes, weapons and ammunition storage areas, and lines of communication took away Serb mobility and did not allow them to respond to . . . offensives elsewhere in Bosnia." Michael O. Beale, "Bombs over Bosnia: The Role of Airpower in Bosnia-Herzegovina," master's thesis presented to the School of Advanced Airpower Studies, Maxwell Air Force Base, Air University Press, August 1997, p. 37.

80 For a more complete description of Operation Deliberate Force, see Robert Owen, ed., *The Air University Bosnian Air Campaign Study* (Maxwell Air Force Base, Ala.: Air University Press, forthcoming).

81 Serbia's efforts to work with Russia for a diplomatic solution apparently began in earnest in mid-May, well before the early June strikes against Serbian forces that proved more effective because of the KLA's presence. See BBC News, "Belgrade Diplomacy Leaves NATO Unmoved," August 1, 1999, http://news.bbc.co.uk/1/hi/world/europe/356246.stm; and Steven Erlanger, "With Milosevic Unyielding on Kosovo, NATO Moved toward Invasion," *New York Times*, November 7, 1999, p. 1.

82 Chris Hedges, "Kosovo's Next Masters?" *Foreign Affairs*, Vol. 79, No. 3 (May/June 1999), pp. 24–42.

83 Byman and Waxman, "Defeating U.S. Coercion."

84 Note that a counter-coercive strategy such as inflicting casualties need not succeed for coercion to fail. Coercion relies on manipulating an adversary's perceptions of future costs, so even if an adversary is badly mistaken in its beliefs about a coercer's willingness and ability to incur costs, it may nevertheless hold out.

85 For such conclusions and evidence drawn from other studies, see Eric Larson, *Casualities and Consensus: The Historical Role of Casualties in Domestic Support for U.S. Military Operations* (Santa Monica, Calif.: RAND, 1996). See also John E. Mueller, *Policy and Opinion in the Gulf War* (Chicago: University of Chicago Press, 1994), pp. 76–77, who reports empirical findings from previous conflicts to support the theory that U.S. casualties, especially under certain circumstances, erode public support for continued operations. Harvey M. Sapolsky and Jeremy Shapiro present a strong argument that many empirical works underestimate casualty sensitivity among politicians. See Sapolsky and Shapiro, "Casualties, Technology, and America's Future Wars," *Parameters*, Vol. 26, No. 2 (Summer 1996), pp. 119–127.

86 Quoted in Stanley Karnow, *Vietnam: A History* (New York: Penguin, 1997), p. 184. Saddam Hussein shared this belief prior to the Gulf War, reportedly having told the U.S. ambassador to Baghdad shortly before the invasion of Kuwait, "Yours is a society which cannot accept 10,000 dead in one battle." Quoted in Freedman and Karsh, *The Gulf Conflict*, p. 276.

87 Quoted in Barry M. Blechman and Tamara Cofman Wittes, "Defining Moment: The Threat and Use of Force in American Foreign Policy," *Political Science Quarterly*, Vol. 114, No. 1 (Spring 1999), p. 5.

88 United Press International, text of Milosevic interview, April 30, 1999.

89 The head of Serbian forces in Kosovo also publicized the threat of heavy casualties to deter a NATO ground attack. BBC News, "NATO Promised 'Hell' in Kosovo," May 30, 1999, http://news.bbc.co.uk/1/hi/world/monitoring/356832.stm (visited on August 1, 1999).

90 William M. Arkin, "Baghdad: The Urban Sanctuary in Desert Storm?" *Air Power Journal*, Vol. 10, No. 1 (Spring 1997), pp. 4–20; and Michael R. Gordon and Bernard E. Trainor, *The Generals' War: The Inside Story of the Conflict in the Gulf* (Boston: Little, Brown, 1994), p. 326.

91 Steven Lee Myers, "All in Favor of This Target, Say Yes, Si, Oui, Ja," *New York Times*, April 25, 1999, sec. 4, p. 4.

92 Ignatieff, "The Virtual Commander," p. 33. For a sample of common arguments against the legality of some NATO targeting practices, see Michael Dobbs, "A War-Torn Reporter Reflects," *Washington Post*, July 11, 1999, p. B1.

93 Cordesman, "The Lessons and Non-Lessons of the Air and Missile War in Kosovo," pp. 45–46.

94 Elaine Harden and John M. Broder, "Clinton's War Aims: Win the War, Keep the U.S. Voters Content," *New York Times*, May 22, 1999, p. A1.

95 Matthew C. Waxman, "Coalitions and Limits on Coercive Diplomacy," *Strategic Review*, Vol. 25, No. 1 (Winter 1997), pp. 38–47.

96 Michael R. Gordon and Eric Schmitt, "Thwarted, NATO Agrees to Bomb Belgrade Sites," *New York Times*, March 31, 1999, p. A1.

97 The total number of strike aircraft tripled after the first month, and the overall sortie rate increased dramatically as well. Cordesman, "The Lessons and Non-Lessons of the Air and Missile War in Kosovo," pp. 11–14.

98 Interpretations of legal obligations and factual circumstances vary. Moreover, some political pressures push against rather than with the humanitarian goals of the legal regime; while concern with collateral damage may caution tremendous restraint in conducting air operations, concern with force protection, military effectiveness, and even financial cost may cause planners to undervalue civilian costs to operations, arguably beyond legal bounds. For critical appraisals of NATO's practices, see Fintan O'Toole, "Nato's Actions, Not Just Its Cause, Must Be Moral," *Irish Times*, April 24, 1999, p. 11; and Julian Manyon, "Robinson Criticizes Nato's Bombing," *Independent*

(London), May 14, 1999, p. 4. It must be noted that such critiques often failed to address the immense risks that civilians would face in the event of a ground war.

99 Thomas E. Ricks, "NATO Commander's Job Is Maintaining Support from Members for Airstrikes," *Wall Street Journal*, April 13, 1999, p. 10.

100 Critics who complained that bombing from high altitudes undermined the sheer military effectiveness of air strikes generally miss the point that although such practices do carry disadvantages such as reduced accuracy or ability to hit key targets under certain weather conditions, they removed Milosevic's only practicable opportunity to inflict casualties.

101 See Viktor Chernomyrdin "Impossible to Talk Peace with Bombs Falling," *Washington Post*, May 27, 1999, p. A39.

102 David R. Sands, "U.S. and Russia Patch Up Relations," *Washington Times*, June 25, 1999, p. A1.

103 Quoted in Andrew Gilligan, "Russia, Not Bombs, Brought End to War in Kosovo Says Jackson," *London Sunday Telegraph*, August 1, 1999, p. 1. General Clark also refers to Serbia's "isolation" as a major factor in Milosevic's ultimate decisionmaking. See "Interview: General Wesley Clark."

104 Ironically, the most significant diplomatic windfall for Serbia occurred when a U.S. warplane hit—very precisely—the Chinese embassy based on faulty intelligence.

105 Cohen, "The Mystique of U.S. Air Power," p. 109.

10 What's wrong with the intelligence process?

Robert Jervis

The American intelligence community continues to be taken by surprise and political leaders, as well as mass media commentators and analysts, continue to be surprised when this occurs. For explanation, they all look for blunderers, if not villains.

True, the intelligence community failed to detect the developing revolution in Iran, the growth of the peace movement in Europe, and the pressures leading to the Egyptian attack on Israel in 1973. But for Americans to expect their intelligence community to predict many, if not most, of the non-routine political occurrences in world politics is unrealistic. If we are keeping score, we should expect the success rate of intelligence to more closely approximate a batting average rather than a fielding percentage. If we are right, say, one time in three, we would be doing quite well. The reasons for this lie in both the structure of the intelligence community and the nature of its product.

Inherent limits of intelligence

The impediments to understanding our world are so great that even without organizational deformities, and politicization of the intelligence process, intelligence will often reach incorrect conclusions. The first intrinsic difficulty is that the world is not predictable. In part, this is due to limitations on our knowledge. But even on the optimistic assumption that we will learn more in the future, we must not lose sight of the fact that politics is characterized by contingent relationships, accident, and exceptional situations.

The physical world is probably more deterministic than the world of politics, and yet even there many of the laws can only be couched in statistical terms. This is highly valuable, especially when we are dealing with large numbers of events, no one of which is crucial in itself. But knowing that under certain circumstances a specific outcome will occur 80 percent of the time does not tell you whether a particular event will fall in the majority or the minority category. Some cases of recent surprises similarly are instances, not of our failure to grasp important law-like generalizations, but of exceptions to these generalizations. For example, the fall of the Shah was highly unusual if not unique in that it violated the well-established social science generalization that a leader who is supported by intact security forces cannot be overthrown by unarmed internal opposition.

A second reason why even a growth in our knowledge would not lead to complete predictability is that many, if not most, situations are interactive. That is, a nation's behavior is determined in part by its leaders' predictions of how others will behave. If we were better able to predict Soviet behavior – and they knew it – they might alter their actions accordingly. For example, reporters covering President Johnson found themselves in an extreme variant of this situation: If they published purportedly accurate reports on an appointment or action that Johnson had decided on, he would read their stories and behave to the contrary. In international politics both the desire to increase one's bargaining position by seeming unpredictable and, more importantly, the need to take into account how other nations expect you to behave in designing your own policy mean that others' beliefs about what you know about them can influence behavior in a way that can lead intelligence predictions to be self-disconfirming.

Even if this were not a problem, an increase in general knowledge about human and state behavior would not lead to perfect intelligence because the latter usually requires a great deal of detailed information, some of which may exist only in the minds of one or two decision-makers who are not likely to be cooperative. This problem is most pressing in dealings with adversaries, but it arises with allies as well. For example, one of the main reasons why the Shah did not use all the force at his disposal in 1978 probably was his knowledge that he did not have long to live and the realization that even if unleashing security forces would repress the revolution, it would also create a system that his son could not rule. But we could not take this very important factor into consideration without knowing the state of the Shah's health and his beliefs about his health.

A final problem that limits the extent to which intelligence ever can be completely accurate is the use and possibility of deception. In many cases, we are trying to predict the actions of people who are, or may be, trying to mislead us. Social scientists rarely have to worry about more than the danger that those they are studying are trying passively to conceal important facts from them. Nations, on the other hand, often try to mislead one another. The use of "turned" agents is only the most dramatic illustration of such vulnerability. Indeed, if one country learns what indices or aspects of its behavior the other is using to draw inferences, it may be able to manipulate these to project a desired (and misleading) image.[1] Furthermore, the knowledge that the other may be attempting deception will often lead intelligence analysts to discount information which in fact is reliable.

To summarize this part of my argument, there are severe intrinsic limits to how good intelligence can be. Even if the organizational problems discussed below and perceptual impediments to accurate perception were remedied or removed, we could not expect an enormous increase in our ability to predict events. Indeed, I think there is a danger in exaggerating the effectiveness of various reforms. We will mislead ourselves, and others, if we pretend that by changing the way we do business we can anticipate our opponent's every move.

Trends in the quality of intelligence

We will never be able to do as well as we would like, but this does not mean that we cannot do better than we are doing now. Rigorous measures of the quality of intelligence

are lacking, but it is not reassuring to look back over time at documents, which analyze the other side, its past foreign policy behavior, and its likely future actions. Although such general appraisals of the other side are relatively rare, they are both crucial and probably indicative of the general level of sophistication of political analysis. Thus I do not think it is unfair to compare, for example, the Crowe memorandum of January 1907 (a British analysis of German policy and intentions) with NSC-68.[2] Without arguing the validity of the conclusions presented in either document, I think it is fair to say that almost any reader would judge the former to be a much more careful, lucid, well-argued, and sophisticated piece of political analysis. Later American surveys of Soviet intentions (such as the famous "Team A-Team B debate") are not available for public inspection, and I doubt if many knowledgeable people would argue that the level of argument presented in papers like these is better than those in the declassified postwar documents. In other words, we see the opposite of progress.

The design of an ideal intelligence system

I want to look at what an ideal intelligence system would look like, even though this is an "ivory tower" approach, and will make little effort to deal with the enormous difficulties that stand in the way of implementing the system being described. Two important topics – the current quality of intelligence personnel and the psychological factors – that render accurate perception of other nations very difficult will also be put aside. I have discussed the latter elsewhere[3] and a treatment of the former would entail measures of individual quality that are simply unavailable. The essential premise of this article is that even if the quality of intelligence analysts is not as high as it should be, we are getting less out of these people than we could because of the nature of our intelligence system. A final introductory point is that only a few of my suggestions will deal with the formal structure and organization of intelligence production. Such questions as whether the Central Intelligence Agency (CIA) should be divided along regional or functional lines are important and have received a great deal of attention.[4] But I think at least equally important and much less commented on are the informal norms and incentives which exercise a great deal of influence on the quality of intelligence.

Formal structure of a well-constructed intelligence system

Before dealing with informal norms and incentives, let me make three points about the more formal structure of a well-constructed intelligence system. First, we would expect that great attention be paid to training programs, both for new recruits and for managers and analysts at higher levels. Perhaps this reflects an academic's bias in favor of courses and advanced degrees, but without denying that much can be learned by apprenticeship, formal training programs are useful both for conveying a great deal of information about the substance and methods of intelligence analysis and for countering the mystique that analysis is essentially intuitive. No one who has taught can believe that we can fully comprehend the world or that we are able to convey all that we think we know to our students. Our own research has taught us humility in the former regard, and grading examinations has shown us the limits of our teaching abilities. Nevertheless, new recruits

can be trained in the alternative methods of analyzing information about politics and can be taught some of the necessary tools of political science, history, and economics. They can practice using the information available to the intelligence community and can benefit by having their analyses criticized by their peers and instructors. Similarly, mid-career analysts and managers can benefit by refresher courses, both to supply them with information about new ideas and techniques and to allow them the time and freedom to explore approaches and modes of argument that they do not have time to think about when they are fully engaged in their day-to-day jobs.

A second requirement for a good intelligence system is some degree of specialization. Unfortunately, no one can become an expert on a complex country or difficult problem in a few months. Too rapid rotation and excessive stress on the virtue of being a generalist will lead to an insufficient depth of knowledge. This is not to say that experts will necessarily get the right answers. Indeed, the parochialism of those who know all the facts about a particular country that they consider to be unique, but lack the conceptual tools for making sense of much of what they see, is well known. On the other hand, probably a graver danger lies in not having sufficient expertise about an area or a problem to detect and interpret important trends and developments. To make up for such deficiency, analysts tend to impose on the information the concepts, models, and beliefs that they have derived elsewhere. Non-expert analysts may even share the failings of less well-informed decision-makers who see diverse countries in terms of implicit models derived from their western experience.

Many current issues in a country or region can only be understood in terms of their historical development and interpreting the behavior of a particular decision-maker often requires great familiarity with the details of his/her background. National culture, largely derived from the country's history and social structure, is also often part of the explanation for a nation's idiosyncratic behavior and requires a significant degree of expertise to grasp. For example, I do not think it is an exaggeration to say that many Iranians, both in the elite and in the general public, have a world view that we would consider to be close to paranoid. That is, they think that almost all significant events in their country are controlled from the outside. Thus many Iranians will ask their American friends why the U.S. installed Khomeini in power. By this they do not mean why we did not intervene to prevent the revolution – a perfectly understandable question – but rather why we actively worked to overthrow the Shah and replace him with Khomeini. They cannot believe that the determinants of the Iranian revolution lie almost completely within the country. These beliefs can help explain the Shah's puzzlement over the extent to which the U.S. was actually supporting him during his last six months in power. Thus, from the Iranian perspective, the signs of American uncertainty and confusion may well have been read as indicating a lack of support for the Shah, if not actual efforts to undermine him.

As this example points out, understanding the behavior of others usually involves grasping their beliefs about the external environment in general and the actions of the U.S. in particular. Indeed, intelligence is often expected to predict how a state will react to alternative American policies, and this can only be done if one understands the images of the U.S. that the other holds. A necessary condition for performing these tasks is intimate knowledge of the other country; its history, culture, economy, social structure, and leading figures. This expertise cannot be developed quickly.

This is not to say, however, that employing experts on a particular region provides anything like a guarantee of accuracy. Experts are often wrong and the fact that the senior CIA analyst on Iran had an excellent command of the country's language, religion, culture, and politics did not prevent him from sharing the basic misconceptions held by most people who knew much less about that country. There is no perfect balance between the requirements of local knowledge and the need to avoid the dangers of "localism." Or, if there is a perfect balance, none of us knows how to find it or how to recognize it if we did find it. Nevertheless, I cannot help but wonder whether the intelligence community contains the necessary breadth and depth of expertise in many less crucial "exotic" countries than the Soviet Union and China. Knowledge in the intelligence community is likely to be very sparse in many areas. In part, this mirrors deficiencies in our society – how many experts or specialists on Iraq, for example, are there either in or out of the U.S. government?

To increase the level of expertise, we need to supply adequate training and when possible, we must make certain that analysts get first-hand exposure to the country they are dealing with. Obviously, this will not always be possible. Experts on the Peoples Republic of China, both in and out of government, could not visit there before 1971. Furthermore, visits do not ensure correct judgments. In fact, information gathered first-hand has so much impact on one's beliefs (seeing is believing) that such visits serve to mislead rather than enlighten! For example, the impressions formed by many visitors to the PRC in the early 1970s were probably more distorted than those formed on the basis of secondary information. Nevertheless, to gain understanding of a country without actually spending a prolonged period of time there is extremely difficult. But can or does the intelligence community permit or encourage this sort of exposure? The decision is not, of course, solely up to the community.

Information norms and incentives in the intelligence community

Even more important than the variables discussed so far are the informal norms and incentives present in the intelligence community itself. Good intelligence demands three interrelated conditions. Analysts should present alternatives and competing explanations for a given event, develop the evidence for each of the alternatives, and present their arguments as fully as is necessary to do justice to the subject matter. This is not to imply, of course, that if these conditions are met the resulting analyses will always be excellent but only that their omission will substantially reduce the probability that the product will be of high quality.

Stansfield Turner has pointed out that both the CIA and the universities create and transmit knowledge. I think that despite the many important differences in the missions of these two institutions, the conditions that are effective in one setting are likely to prove fruitful in the other.

Both intelligence analysts and scholars seek to understand and predict events. There is a significant difference in emphasis: Scholars are more concerned with understanding; analysts with predicting. This difference should not be exaggerated, however. Often the best way to test a scholarly theory is to draw predictions from it. Predictions that are

made without an understanding of the causal relationships are not likely to be accurate or defensible. Thus, while the nature of their work requires intelligence analysts to be deeply concerned about what will happen in the near future, the way they go about framing and answering their questions should not be enormously different from the outlook employed by scholars. Good intelligence requires that the analysts undertake serious and careful investigation of why other nations are acting as they are.

While there is no agreed upon "scientific method" in the social sciences, I think everyone would agree that, at minimum, investigators must consider alternative explanations for the behavior that they see and must systematically marshal the evidence that is relevant to the alternative possibilities. Without full access to the workings of the intelligence community, one cannot judge the extent to which these standards are met. But many commentators, starting with Roger Hilsman's classic study in the late 1950s, argue that the intelligence community proceeds quite differently.[5]

Indeed, the informal norms and incentives of the intelligence community often form what Charles Perrow has called "an error-inducing system."[6] That is, interlocking and supporting habits of the community systematically decrease the likelihood that careful and penetrating intelligence analyses will be produced and therefore make errors extremely likely. The problems described below reinforce each other and are often reciprocally related. Changing one element without changing others is usually extremely difficult and sometimes impossible. For example, it would be hard to convince the consumers that a different style of intelligence would yield superior results unless this could be demonstrated. But to do this would require that at least part of the community produce analyses of the appropriate kind, which in turn would be almost impossible without major changes in the community – changes that would require the support, if not the leadership, of the consumers.

As it stands now, most political analysis would better be described as political reporting. That is, rather than analyzing developments, presenting alternative explanations for the events, and making competing predictions that would follow from the different explanations, the analyst is expected to summarize the recent reports from the field – "cable-gisting." This method produces good results when reports from the field are accurate and informative; it cannot be expected to add much on its own. The pattern, of course, does not hold in all areas of the community's concern, particularly in scientific and technical intelligence, coverage of Soviet and Chinese military developments, and the analysis of the Soviet and Chinese economies and politics.

The politics in most countries is reported rather than analyzed. According to most accounts, the reporting style is not analytical – there are few attempts to dig much beneath the surface of events, to look beyond the next few weeks, to consider alternative explanations for the events, or to carefully marshal evidence that could support alternative views.

Requirements imposed by appropriate style

An appropriate style would impose a number of requirements. First, many of the analyses would have to be fairly long, say ten or twenty pages. Recent events often can be reported in several hundred words, but complex events cannot be analyzed within

the same constraint. Time and space are necessary to develop several ideas and critique others; evidence cannot be presented and weighed in one or two pages. (An obvious consideration here is the willingness of the consumers to read such papers.) A second requirement is the consideration of alternative explanations and alternative predictions. Of course, we are all familiar with arguments of the form: "On the one hand. . . on the other hand." That is not what is needed. Rather, what is much more helpful is a clear exposition of possible explanations coupled with a presentation of the evidence that supports each view and the information that might be gathered that would point in one direction or the other. The development of alternative explanations can lead to better analysis by articulating the reasoning that leads certain outcomes to be expected and this involves exposing implicit assumptions to more careful scrutiny. Such processes can also make people sensitive to the changes, unexpected events, or new evidence that would, if present, alter the current predictions. Such an approach does not belong only in the world of scholarship. What I am calling for describes the approach used in the Crowe memorandum mentioned earlier. Significantly, William Casey, who became CIA Director in 1981, encouraged the practice (initiated by his predecessor Stansfield Turner) of making a clear delineation of the differences of opinion in the main body of a National Intelligence Estimate (NIE) rather than submerging divergent views or opinions in footnotes. This has certainly been a step in the right direction, although it is not clear whether the arguments are developed with sufficient care and clarity.

A third requirement for good intelligence is the existence of a critical group of analysts who can discuss and criticize each other's views. This is a matter both of the number of the available people and, more importantly, of a style of "peer review" in which analysts pay attention to what others are saying and engage in constructive critical discussions. In other words, what is required is a real "intelligence community."

The need for functioning peer groups is related to a general characteristic of a well-designed intelligence system and an inherent tension created by the diverse pressures to which it is subjected. Part of the task of the intelligence community is to develop knowledge. For this task, the important structural elements of the organization should be horizontal. That is, knowledge is best produced through intensive interaction among individuals who are able to treat each other as intellectual equals. Ideas are developed, shared, criticized, and judged on their merits; people build on each other's work and learn from each other's errors. This is the ideal of a university, although, of course, one that at best is only approximate. But the intelligence community has to transmit as well as generate knowledge. Furthermore, its audience is not one of peers, as is the case with a university, but rather a hierarchy made up of members of the community and the policy-makers. In this basically vertical structure, the analysts report to branch chiefs who report to office directors and so on up the line.

As on other questions, I do not see any way to determine the optimum balance between the horizontal and vertical structure. But it seems likely that within the intelligence community the vertical structure predominates over the horizontal. The result is that analysts are given more incentives for adequately conveying information to those who know relatively little about a problem than they are for developing their ideas with the degree of discipline and empirical support that would be required for the production of superior analysis. Similarly, good analysts are generally rewarded for their labors; not

by receiving greater pay and higher prestige for continuing to produce first-rate intelligence, but rather by being moved up the organizational ladder. Thus many a first-rate analyst becomes a second-rate administrator. Such a promotion policy also implicitly tells people that what matters most is management, not the writing of excellent analyses on other countries. Good management performs indispensable roles, of course, but the primary work must be done by the individual analysts, and a reward structure should reflect this priority.

Most accounts of CIA and other intelligence agencies that I am familiar with suggest that the three requirements for good intelligence are not met. In the political arena, for example, the work is focused on reporting rather than analysis. Papers and memoranda are usually quite short. Alternative explanations are rarely suggested, let alone rigorously analyzed. On some highly politicized questions the community is split in predictable ways, with the result that in most areas analysts rarely get the sort of careful criticism that constitutes peer review.

On some occasions, of course, lengthy papers are produced. Under Stansfield Turner, for example, some National Intelligence Estimates (NIEs) were the equivalent of a short book. But again except for some of the NIEs on the Soviet military, these do not seem to have been the occasion for serious analysis. They were long; not because important questions were analyzed in depth, but because the contributions of each agency had to be included.

Furthermore, only rarely do they seem to have been taken seriously by consumers.

Most of the time, analysts want to be published in the *National Intelligence Daily (NID)*, and this (like the newspapers on which it is modelled) prints only brief accounts. By their nature, these articles can be little more than the "cable-gisting" referred to earlier. It is possible for analysts to write longer papers for other intelligence community publications, but the incentives for doing so are not great. The *NID* is more widely read because the articles are shorter and the analysts therefore receive more rewards for having their reports appear in it.

Linked to the brevity of most reports is the absence of alternative explanations for the events being reported. Of course, a necessary condition for this style is the ability to write at some length. But the space constraint is only one reason why alternatives are rarely presented. It appears that the presentation of competing explanations is viewed as likely to confuse the consumers, if not the analysts themselves. The job of intelligence is seen as presenting the correct, or at least the most likely, version of events rather than trying to clarify the issues by presenting alternative viewpoints. The informal norms of the community stress presenting facts, not engaging in what is viewed as speculation. Thus when an explanation for events is given, it is not likely to take the form of an explicit argument but rather to be presented as the only possible reason why events might be unfolding as they are. From this perspective, the idea of developing several alternative explanations is foreign.

Greater contacts with outside experts including, but not limited to, academics would also be useful in this regard. The argument is not that these people are more likely to have the correct answers than are the intelligence analysts; only occasionally will they have information and ideas that would not otherwise be available to the government. Rather, the advantage of the intersection is that the outsiders often can pose questions

that the analysts have overlooked but need to consider. Furthermore, the outsiders often have disciplined patterns of thinking that may prove particularly useful. Outside experts are also likely to be attuned to the possibility of alternative explanations for events and can help focus attention on what evidence could be mustered to support various views. These habits of mind can raise the quality of intelligence.

The third requirement that is necessary to support good political analysis also seems to be missing. Although we refer to the "intelligence community," this phrase does not seem to describe accurately the way the government works on most issues of political intelligence. There is an insufficient exchange of careful criticism of one another's work. Of course, there are extensive and often acrimonious debates when institutional interests are at stake, and one sometimes finds long-term factions forming over such issues as internal Chinese politics before the death of Mao. (I do not mean to hold up these debates as a model. Because they often represented conflicts between well-entrenched positions, they rarely were highly intellectually productive.) But on the day-to-day issues of politics in most countries, the number of analysts involved is quite low and the mechanisms for a real intellectual community are so weak that analysis is rarely disciplined by a high level of communication and critical assessment.

Personal relations are extremely important here. In some cases, analysts working on the same country in different parts of the government, who know and respect each other, comment on each other's work. In other cases, someone, often from the State Department, will form an informal group composed of analysts concerned with a given country. But probably in the majority of cases the intelligence analysts, especially those in the CIA, work in intellectual isolation. Their connections with their counterparts in the rest of the government are tenuous and they receive only scant critical and informed discussion of their views. The physical isolation of Langley plays a role here, as does the lack of readily available secure telephones in the State Department. But informal norms again are more important; the basic idea of peer review is not seen as a necessary part of the intelligence production process.

The ability of analysts and policy-makers to work well together in a crisis is increased by a high degree of communication in more routine situations. If people have not worked together before a crisis and have not developed a fairly good understanding of how each other thinks, their ability to listen and cooperate in the much more pressured and politicized atmosphere of a crisis will be sharply reduced. This may be one reason why intelligence often plays only a small role once a crisis arises.

Deception

A good intelligence system must systematically consider the possibility of deception. Although I think everyone would agree to this as a general principle, the practical difficulties are enormous. A deceiver wants to mimic the image that would be projected by the actor he is impersonating; any behavior that can be manipulated can be used for deception. Almost any evidence that at first seems like convincing evidence for a given intention or image can be seen as just what a deceiver would want to do. Not only is there no way out of this conundrum, but there are obvious costs in being too concerned about it. Such an approach leads to endless cycles of "he thinks that I think that he thinks

that I think . . . ." Alternatively, if one downgrades all information on the grounds that it might be deceptive, one would have little data from which to draw inferences. But if worrying too much about deception is not wise, this does not mean that we should put the possibility out of our minds entirely.

Determining the optimum degree of skepticism seems impossible. But with the exception of a few episodes, such as James Angleton's preoccupation with a "mole" and David Sullivan's interesting, if unconvincing arguments on Soviet deceptions in the strategic weapons area, I suspect that the intelligence community often fails to take the possibility of deception seriously enough.[7] I think the main reason for this is not naivety, but rather the understandable hesitancy on the part of the analyst to discard the few pieces of seemingly good information that are available. To try to draw serviceable inferences from the behavior of others is indeed difficult at best. And for an analyst to think about the possibility of deception at every turn would complicate his task enormously. Nevertheless, one can ask whether this stance is in the interests of either the U.S. or the intelligence community as a whole. In the best of all possible worlds, the intelligence system would be able to take into account the danger of deception without creating excessive paranoia.

Consumers' attitudes

A final condition for the functioning of an effective intelligence system is that the consumers understand what should and can be done. The question of the reciprocal links between the policy-maker and intelligence is largely beyond the scope of this paper.[8] But in passing I wish to point out the importance of learning more about both the impact of policy on intelligence and the influence of intelligence on policy. Critics frequently charge that intelligence on important issues is highly politicized and that the best way to predict what the intelligence community will say is to know the preferences of the policy-makers, but we have remarkably little information that could actually confirm or disconfirm this view.

We also know little about the conditions that breed servile or independent intelligence. The personalities of the analysts presumably are important, as is the integrity of the leaders of the community. Intelligence is also easier to keep pure when it is irrelevant. That is, there will be fewer illegitimate pressures on intelligence when the subjects covered are unimportant or the quality is so low that the reports can be ignored. Of course, the problem is to make the analysis both disinterested and important. Indeed the pressures to make intelligence conform to policy are heartening because they imply that what the community says has some impact.

But how great is this influence? Statesmen do not like intelligence that undermines their favored policy because such reports will give aid and comfort to their domestic opponents. But does intelligence often shape or alter policy? We usually assume that it can, and indeed the implicit assumption of this article is that if we increase the quality of intelligence, policy would benefit. In fact, however, we cannot be sure that changes in intelligence would have much influence. Actually, American decisions that have been significantly influenced by intelligence estimates do not readily come to mind.

Even if better intelligence would lead to better policy, the sort of arrangements I have called for could not be fully implemented without changes in the outlook of the consumers. First, they should realize that no matter how good an intelligence system is, it cannot predict all important events. Failures do not automatically indicate general problems with the system. More importantly, decision-makers should realize that it is dangerous to base their policies on the assumption that they can predict all aspects of the future. A policy that is too fine-tuned to expectations of how others behave is likely to fail. Furthermore, both consumers and producers of intelligence need to pay closer attention to the question of what can be done with various kinds of warnings. The consumers need to appreciate the limits on the kinds of information and analyses they are likely to receive in order to be best prepared to act on the intelligence; the producers need to understand the links between what they can say and what policy can be in order to concentrate their energies most fruitfully.[9]

Second, decision-makers should not feel that the prime responsibility of intelligence is to beat the wire services in reporting riots and coups. Most presidents get angry when they learn about important events from the mass media rather than from intelligence. Intelligence should have more insightful things to say than the mass media, but should not necessarily be faster in reporting sudden events. This is what the wire services specialize in and their communications facilities are designed for speed. They have fewer layers of bureaucracy and no need to be concerned with security. Third, decision-makers should appreciate the importance of having an intelligence system that can raise the general quality of discussions within the government. This also implies a willingness on the part of consumers to read documents that are more than one or two pages long.

Finally, consumers need to relax their understandable aversion to allowing intelligence analysts detailed knowledge of American policy. Standing rules prohibit the intelligence community from knowing much more about what the U.S. is doing than is printed in the newspapers. This seems to make sense; the job of intelligence is to predict what others will do, not to second-guess American policy-makers. But in many cases one cannot understand what others have done or estimate what they will do in the future without knowing what they think the U.S. is doing to them. An important influence on their policy is their external environment, in which the U.S. usually looms large and their behavior will be misinterpreted if American actions are not taken into account. The most obvious examples are cycles of mutual hostility. But other patterns are possible also, such as the other side growing bolder because it believes the U.S. is weak. In almost all cases, the other nation's image of the U.S. will play a role in setting its goals and judging how to achieve them. Specific acts can be triggered by what the U.S. has just done or is expected to do. To some extent, the relevant information about U.S. policy is public knowledge, but many aspects, such as covert actions, military maneuvers, and diplomatic communications, are not. Access to this information is often essential if the intelligence is to be accurate.

I grant that the likelihood of convincing consumers to change their ways is not great, and a reader may immediately reject this article on the grounds that without such changes the kind of intelligence assessments I am calling for would not receive a favorable reception. Although there is something to this, perhaps the intelligence community

has paid too much attention to the question of how to get the consumers to listen and not enough to how the community's internal structure and norms might be altered to enable intelligence to be worth listening to.

Notes

1 Robert Jervis. *The Logic of Images in International Relations.* Princeton, N.J.: Princeton University Press, 1970, pp. 41–65.
2 Eyre Crowe. "Memorandum on the Present State of British Relations with France and Germany, January 1, 1907," in G. P. Gooch and Harold Temperley, eds., *British Documents on the Origins of the War*, 1889–1914, vol. 3, *The Testing of the Entente, 1904–6.* London: His Majesty's Stationery Office, 1928, pp. 397–431; NSC-68 in U.S. Department of State, *Foreign Relations of the United States:* 1950, vol. 1. Washington D.C.: Government Printing Office, 1967.
3 Robert Jervis. *Perception and Misperception in International Politics.* Princeton, N.J.: Princeton University Press, 1976.
4 Sherman Kent. *Strategic Intelligence for American World Policy.* Princeton, N.J.: Princeton University Press, 1949, pp. 116–47. Revelant documents can be found in Tyrus Fain, et al. eds. *The Intelligence Community: History, Organization and Issues.* New York and London: Bowker, 1977.
5 Roger Hilsman. *Strategic Intelligence and National Decisions.* Glencoe, Ill.: Free Press, 1956.
6 Charles Perrow. *Normal Accidents.* New York: Basic Books, 1984.
7 David Martin. *Wilderness of Mirrors.* New York: Ballentine Books, 1980; David Sullivan, "Evaluating U.S. Intelligence Estimates," in Roy Godson, ed. *Intelligence Requirements for the 1980s: Analysis and Estimates.* New Brunswick, N.J.: Transaction Book, 1980, pp. 49–73.
8 An excellent study of this subject in terms of British policy and intelligence in the 1930s is: Wesley Wark. *The Ultimate Enemy: British Intelligence and Nazi Germany.* Ithaca, N.Y.: Cornell University Press, 1985.
9 For further discussions, see Alexander George. "Problem-Oriented Forecasting," in Nazli Choucri and Thomas Robinson, eds. *Forecasting in International Relations.* San Francisco, CA: W. H. Freeman, 1978, pp. 329–37; Richard Betts. *Surprise Attack.* Washington, D.C.: Brookings, 1982, pp. 286–95.

11 Deception and intelligence failure

Anglo-German preparations for U-boat warfare in the 1930s

Joseph A. Maiolo

On 28 September 1939, at the naval base in Wilhelmshaven, the commander of the U-boat arm, Rear Admiral Karl Dönitz, described to Adolf Hitler and Grand Admiral Erich Raeder, the head of the *Kriegsmarine* (the German Navy), his vision of how to strike a decisive blow against Britain's sea lines of communication. Progress in wireless communications since the 1914–18 war, Dönitz explained, would permit co-ordinated attack by U-boats to overwhelm British convoys. However, a massive expansion of the existing U-boat building plan was required before such an offensive could be mounted. Of course Dönitz's remarks should come as no surprise: what else would Nazi Germany's oracle of U-boat warfare tell his master? Still, there is something remarkable about this particular meeting. According to his notes, Dönitz devoted much of his time to persuading Hitler that advanced British anti-submarine technology had not rendered the U-boat tactically ineffective. Operational results so far, he added, had proven such pre-war assumptions to be false.[1]

Dönitz was in part correct. The Royal Navy did possess ASDIC (sonar) to locate submerged U-boats, but Britain's defences were not yet ready. The list of British shortcomings in the defence of trade is well known to historians: a scarcity of escort vessels, a tactical fixation with U-boat hunting instead of escort work, the failure to foresee the night surface attack and poor air-sea co-operation in convoy defence.[2] Likewise, as his plea to Hitler suggests, Dönitz knew that Germany's 57 U-boats fell far short of the 300 required for a great sub-surface offensive against shipping.[3] In short, in 1939, the German Navy was as ready to mount a U-boat campaign as the Royal Navy was ready to defend against one. Historians usually account for this symmetrical lack of readiness by examining developments in Britain and Germany *separately:* British admirals are blamed for complacently relying on ASDIC as the 'solution' to the U-boat; German admirals are berated as big-ship 'conservatives' who ignored the U-boat.[4]

Although these explanations are not wrong, they are incomplete. To make them complete, a look at the *interactive* dimension – that is the role of deception and intelligence – is required. After all, navies are competitive organisations. In peacetime, the bureaucratic process by which one navy assesses the potential wartime performance of another is an inherently subjective activity, dependent on good intelligence, and thus vulnerable to deliberate manipulation. Historians of the European crisis in the 1930s usually associate the projection of false images of military strength to deceive foreign

intelligence services with the Nazi regime. But the British Admiralty also practised deception, albeit on a more modest scale. The Royal Navy employed the general perception of ASDIC as the 'antidote' to the submarine to mislead potential foes about the true state of Britain's anti-submarine defences. This British campaign of deception did have a discernible impact: before 1939 the German Navy failed to discover the realities behind ASDIC'S image, and this intelligence failure helped to shape U-boat policy.

Turning first to the Royal Navy, it should be recalled that underwater detection of U-boats by echo-ranging arrived too late to influence operations during World War I. Although it was a joint Allied venture, the British were quick to end collaboration and take the lead in peacetime research. Yet basic knowledge of the Allied research programme, especially in academic circles, and the post-war development of commercial echo-sounders for measuring and recording sea depth, helped to give rise to the myth that echo-ranging represented a technological breakthrough of decisive significance to the future of submarine warfare. As an understood yet generally under-developed technology, it was natural for outside observers to endow echo-ranging with exaggerated potential.[5]

The surviving records do not reveal when the Admiralty first grasped that the reputation of advanced British submarine detection technology could influence the submarine policies of the other Powers; but it is notable that it wasted no time in cloaking ASDIC in secrecy. This is a telling point because denying an enemy knowledge of one's own true capabilities is the *prerequisite* to any successful deception.[6] In fact, the Royal Navy coined the term ASDIC – an abbreviation derived from the entirely fictitious Allied Submarine Detection Investigation Committee of 1914–18 – precisely because it revealed nothing about the principles on which the technology functioned. More absurdly, the Admiralty ordered that no reference should be made to quartz crystal, the main component of ASDIC transducer, but instead to a secret substance code-named *asdicvite*.[7] The key decision, however, was taken in 1919, when an Admiralty Committee concluded that ASDIC research had to be confined to government establishments 'since experience has shown the impossibility of securing secrecy if development and design are undertaken by outside manufacture'.[8]

The official historian of ASDIC has criticised this high level of security, arguing that as a result research suffered from a lack of external input. Perhaps the innovative minds at work in the industrial and academic sectors would have pushed research ahead more rapidly, but the threat of industrial espionage was real. The Admiralty knew that other navies were making 'special efforts' to discover the secrets of ASDIC.[9] Even limited technical collaboration with the United States, a wartime ally in the struggle against the U-boats, was risky. The Admiralty's Naval Intelligence Division realised that secret technical specifications might find their way from the Submarine Signalling Company of Boston, which supplied equipment to the US Navy, to its business partner, the leading German hydrophone firm, *Atlas Werke* of Bremen.[10] What the Royal Navy feared, and rightly so, was that familiarity with the secret tactical and technical capabilities of ASDIC would breed operational contempt from determined foes.

During the 1920s, therefore, the Admiralty relied primarily on a *passive* policy of secrecy, combined with speculation by naval journalists and rumours in the inter-

national scientific community to inflate the reputation of British anti-submarine defences. In March 1927, however, the Admiralty first considered the use of active measures to manipulate foreign perceptions. The problem was the upcoming Geneva Naval Disarmament Conference and the future of the submarine as an instrument of maritime security. Since the 1919 Treaty of Versailles onwards, Britain had sought world-wide agreement on the total abolition of the submarine. Of course, this wildly ambitious project was doomed to failure. Admiralty planners readily acknowledged that it was unlikely that the Powers would agree to consign all of their sub-surface units to the breakers' yards. The French had refused to co-operate in 1919 and again at the Washington Naval Conference in 1921–22. As a potential means of achieving a breakthrough to advance British interests at Geneva, therefore, Admiralty officials turned to deception.[11]

In March 1927, the Director of Admiralty Plans Division, Captain W. A. Egerton, argued that

> any suspicion that the day of the Submarine was over or its power materially preju-diced owing to its antidote having been discovered would in all probability create a new atmosphere on this subject and one that would tend to veer heavy towards the British standpoint.

A 'leak' to the press via Parliament, he added, could be made 'sufficiently vague and wrapped up with secrecy as to intrigue the world without disclosing details'.[12] Despite the fact that senior staff officers recognised that as yet no claim to have discovered a submarine 'antidote' could be made, the use of ASDIC's reputation to persuade the other powers to abolish the submarine or, at least, to cut submarine force levels gained backing. Captain C. Cameron, the Director of Torpedo Division, went further. Rather than releasing 'vague' details, he proposed propagating the concrete claim that subma-rines attacking ASDIC equipped forces 'would have an almost certain chance of being destroyed in a comparatively high percentage of cases'.[13]

However, the Director of Naval Intelligence, Admiral Alan Hotham, injected a sharp note of caution. He rightly pointed out that the naval powers would not be deceived by such a crude, self-serving ruse. Hotham asked his colleagues to consider how 'this lifting of the veil [on ASDIC] to be received abroad?' 'As a gigantic bluff', he replied, 'which it is. If it is not a bluff, then Great Britain has little or nothing to fear from submarines, and it can make no difference to her whether other nations do or do not possess them . . .' In any case, the French, who would again object to total abolition, would not be impressed since they had a good understanding of the capabilities and limitations of echo-ranging. Consequently, Hotham reasoned, the whole exercise would prove to be counterproductive for two reasons. First, the British lead in ASDIC technology would be destroyed as other states raced to catch-up. Second, the leak would prompt foreign submarine enthusiasts to devise technical and tactical countermeasures to ASDIC.[14]

The idea of a 'leak' in Parliament was dropped. But this episode is significant because it underscores the strengths and the limitations of this passive campaign of deception. In the late 1920s, the chief problem was the gap between image and reality.

The naval staff knew that ASDIC was not yet the core of a truly integrated weapon system for the destruction of submerged submarines. It would have been dangerous for Britain to overplay its hand. Yet it is important to understand that the Admiralty was not banking on current capabilities to deceive foreign navies, but on the weight of future technological possibilities making themselves felt in the present. One example will illustrate this point. In 1929, Admiral Lord Jellicoe, the former First Sea Lord and Commander-in-Chief of the Grand Fleet, admitted to an American press agency in a widely reported interview that the submarine still posed a lethal threat to Britain. Commenting on Admiral Jellicoe's embarrassing frankness, Captain Roger M. Bellairs, the Director of Plans Division, captured the essential feature of the image which the Royal Navy intended to project: 'it is desirable to lay emphasis, not on the threat of the submarine, but rather on the *advance* of anti-submarine methods. . .'[15]

In 1929, this message of the triumph of science over the submarine was reinforced by a decision to lift part the of veil of the secrecy surrounding ASDIC. Technical specifications and performance figures remained closely guarded secrets, but the term itself could now be used more openly.[16] Strict instructions were issued to insure that ASDIC huts on destroyers were secure from unwelcome visitors, yet no great effort was made to conceal its existence, even when ships were teaming with guests during 'Navy Week'. In any case, as the technology was becoming more widely deployed on surface ships and submarines, and thus more difficult to conceal from foreign observers, the decision was probably taken to impress prying eyes with the new installation. Similarly, the term ASDIC also began to appear in official Admiralty publications know to be studied by the intelligence services of other navies.[17] In fact, the *Kriegsmarine* first discovered the term sometime in late 1931 in the Admiralty Fleet Orders' index.[18]

The Admiralty knew that the Germans took a keen interest in the progress of submarine and anti-submarine technology. The naval clauses of the Versailles Treaty forbade Germany from building or developing U-boats. However, in 1922, the *Kriegsmarine* set up in a joint venture with several German shipbuilders a new firm in the Netherlands, *Ingenieurskantoor voor Scheepbouw* (IvS), to continue U-boat design and development abroad to evade detection by the Allied Control Commission. From 1927 to 1932, through a secret office in a private Berlin engineering firm and IvS, German U-boat constructors directed experiments with prototypes laid down in Finland, Holland, Turkey and Spain.[19] Thanks to well-placed sources, however, Naval Intelligence Division monitored these illegal activities.[20] Naturally, the Admiralty anticipated that when the restrictions of the Versailles Treaty were either lifted or broken, which seemed increasingly likely after 1932, the Germans would swiftly build-up a new U-boat arm. As a result, efforts were made to induce uncertainty in the minds of German naval strategists about the future value of the U-boat.

In the summer of 1932, in what was perhaps the Royal Navy's first direct attempt to influence German policy, and timed to influence the World Disarmament Conference at Geneva, the international press and military periodicals picked up a story circulating in London about Admiralty experiments with a 'certain invention' that spelled 'the doom of the submarine as an engine of warfare'. 'Flight by the submarine is useless', the *Daily Herald* claimed:

> The detector shows by means of a moving pointer the exact position, the direction and the distance and tells the pursuer unfailingly where its under-sea quarry is. No means have yet been found by which the properties of the instrument may be nullified. Tests have been made to this end, but the detector continued to function.

A German naval officer ridiculed the story in the semi-official publication *Marine Rundschau*. He pointed out that the lengthy search for the ill-fated British submarine *M2,* accidentally lost off Portland in January, should not have been necessary if such a device existed. Similar questions were raised in the *Army Navy and Air Force Gazette,* and reprinted in the *US Naval Institute Proceedings*.[21] In reality, German experts did not dismiss the *Daily Herald* story, and they rightly acknowledged the great difficulty in distinguishing the sunken *M2* from the large number of other wrecks near Portland.[22] Yet, judging from its conduct from 1936 onwards, the Admiralty appears to have learned one important lesson from this episode: the naval staff realised that if it intended to tout ASDIC as the secret weapon that had heralded the 'doom' of the submarine, then the projection of that image had to be co-ordinated with a convincing performance at sea.

In any case, through official channels, the Royal Navy's tone was more measured. In late November 1934, for instance, the Director of Naval Intelligence, Admiral G. C. Dickens, informed the new German naval attaché that, 'although submarines have become more advanced, antisubmarine measures have advanced to a considerably greater degree, so that the power of the submarine is now significantly limited'. Careful not to exaggerate – after all, Britain maintained a large submarine force – the Admiral admitted that submarines would of course still exert an inhibiting influence on surface-ship operations.[23] As intelligence on this subject confirmed, Dickens undoubtedly framed his message in the full knowledge that this view was widely held in German naval circles. On the same day that Admiral Dickens lectured to the German naval attaché on the future utility of the U-boat, the British naval attaché in Berlin reported 'that the German navy has very little faith in the future of the submarine, and believes that modern anti-submarine methods are so excellent that a submarine will have no chance against a well prepared enemy.'[24] On the strength of accurate intelligence such as this, the Admiralty knew that the *Kriegsmarine* was predisposed to swallow its exaggerated claims.

From 1933 onwards, however, senior officers increasingly feared (wrongly, as it turned out) that scare stories in the press and pointed questions in Parliament were undermining ASDIC's image abroad. The fear generated in Britain by the advent of the Nazi regime and the build-up of the German Navy was the problem. Under the terms of the Anglo-German Naval Agreement of June 1935, which followed Hitler's repudiation of the Versailles Treaty, the *Kriegsmarine* was permitted to build a fleet 35 per cent the tonnage strength of the Royal Navy. In the case of U-boats, the German negotiators obtained a 45 per cent ratio. However, even before the June 1935 deal, Hector C. Bywater, the naval correspondent for *The Daily Telegraph,* revealed 'German naval secrets' to his readers, which included sinister plans for a new generation of advanced U-boats. Imaginations imprinted with U-boat crisis of 1917 were confronted with sensational newspaper headlines that read 'Germany's New Submarines – Experiment in Mass Production – Avoiding Wartime Failure'.[25] As a result, after the conclusion of the Anglo-German Naval Agreement, the First Lord of the Admiralty, Sir Bolton Eyres-Monsell,

was pressed in the House of Commons on the Nazi U-boat menace. At this stage, though, the reputation of British anti-submarine technology was not brought into play; instead, in a less than convincing performance, the First Lord simply reassured Members of Parliament that Berlin would sign up to the new provisions in international law banning 'unrestricted' U-boat warfare.[26]

This did not reassure the public; nor did it silence the Admiralty's critics. Bywater and other journalists continued to write sensational stories about Nazi Germany's new generation of lethal U-boats. In September 1936, for instance, under the headline 'How Science May Reinforce a Sinister Weapon', Bywater described how German engineers, 'after years of research and experiment', had foiled contemporary anti-submarine defences by developing a single-plant 'which is said to drive a submarine with equal facility on the surface and on the water'.[27] In late 1936, the *Morning Post* plastered London with three feet by two feet press headline posters that read 'New German Submarines Designed for Commerce Destruction – Powerful Hydrophones for Locating Shipping'.[28] From the Admiralty's point of view, the steady flow of grim headlines undermined the tale which it had hoped to project – the story of how science had rescued Britain from the subsurface peril. Although in March 1927, officials rejected using Parliament to broadcast false information as a clumsy stratagem, likely to backfire, the negative press in the mid-1930s reversed this policy. The complete paper trial to document the decision has not survived, but its outcome can be found in *Hansard*.

On 15 March 1936, for example, the Admiralty sent a signal plainly designed to reassure the public at home and to misinform naval strategists abroad. Characteristically, the weight of technological progress was brought to bear. Lord Stanley, the Admiralty's Parliamentary Secretary, confidently announced in the House of Commons that 'by the end of the last war' the Royal Navy 'had got the better of the submarine menace, and that position had been still further strengthened by the march of science in the post war years'. To ensure that his message was clearly received, he added with absurd transparency that 'I hope I am not here betraying any very great naval secret, but it is a fact that we have to-day an almost fool-proof and efficient anti-submarine device. I hope it does not reveal any secret to say that it operates on the system of the reflector ray. . .'[29]

One reason why a Parliamentary 'leak' such as this was rejected in 1927, as Admiral Hotham had succinctly put it, was that it would have been a 'gigantic bluff'. Had the targets of the deception called the bluff and begun to develop on anti-ASDIC tactics and devices, then the whole exercise would have been counterproductive. ASDIC research had produced promising results in the late 1920s, but operational sets were not in general use. By the mid-1930s, however, the situation had changed. ASDIC was in general service on British warships and submarines.[30] Moreover, exercises in 1936 appeared to demonstrate that ASDIC-guided destroyer attacks were 'decisive' in six out of ten cases.[31] In other words, by the mid-1930s, the Royal Navy's top planners had become convinced that ASDIC's real capabilities provided the foundations for a plausible projection of an operational performance far greater than actual. More remarkably, this confidence translated into a willingness to influence the submarine policies of potential foes by co-ordinating the inflated image of ASDIC as presented in Parliament with direct action at sea.

The intensification in 1937 of the maritime dimension of the Spanish Civil War – during which German and Italian forces operated covertly on behalf of General Franco[32] – provided the opportunity to do so. In April 1937, against a background of 'alarmist' newspaper coverage of the 'potentialities of submarine warfare' fuelled by the Spanish conflict, the Committee of Imperial Defence met to review Britain's anti-submarine defences. The Admiralty reported that, although there was much to be done in terms of supplying trained ASDIC operators and fitting escorts with the device, the current 'position was very satisfactory'.[33] Yet Admiral Lord Chatfield, the Chief of the Naval Staff (1933 to 1938), and Sir Samuel Hoare, the First Lord, expressed concern about the decline in public confidence and the widespread belief that no progress had been made in anti-submarine methods since 1918. The need for secrecy, the committee acknowledged, ruled out a detailed public statement. Admiral Chatfield, however, had an alternative. He suggested that news that two U-boats were en route to Northern Spanish waters provided an opportunity for a 'categorical' announcement that 'if submarines were discovered submerged in the vicinity of our ships they would be destroyed'.[34]

Of course, Admiral Chatfield intended the 'categorical' announcement to be part boast, part deterrent. Yet it is also clear that Chatfield and his staff ultimately calculated that a successful ASDIC kill would silence critics at home and convince sceptics abroad. The Cabinet, however, made no decision on rules of engagement for British warships. In any case, the *Kriegsmarine,* which had issued strict instructions to its U-boat commanders to avoid contact with the Royal Navy, had long since withdrawn from Spanish waters. However, in August 1937, Mussolini escalated his clandestine war. The Italian dictator dispatched surface and sub-surface forces to intercept a reportedly large Soviet convoy of ships carrying arms to the Republic. On 19 August, in response to the resulting 'unrestricted' attacks, the British government announced that the perpetrators would be counter-attacked. The Admiralty regarded this decision as a potential opportunity to score an ASDIC kill and, consequently, promote the technology's reputation as the submarine 'antidote'. Unfortunately, on 31 August, when an Italian submarine fired a torpedo at the destroyer HMS *Havock,* the news that the submarine had *escaped* destruction received front-page coverage.[35]

The negative press agitated Chatfield. In a telegram to the Commander-in-Chief of the Mediterranean Fleet, the Chief of the Naval Staff underscored the importance to the Royal Navy's 'prestige both at home and abroad' of successful counter-attacks against 'pirate' submarines operating within striking range of British destroyers.[36] On 8 September, the Cabinet authorised destroyer captains to assume that 'if a submarine remains submerged [in the vicinity of a recent sinking then] this will be taken as *prima facie* evidence that it was responsible for the incident'.[37] Yet, at the same time, the danger of an incident at sea sparking a general European war compelled the British to contain the conflict. In September, the British and French governments concluded an agreement at Nyon (Switzerland) with seven other Powers, excluding Italy and Nazi Germany, to check the 'pirate' submarine attacks with international naval patrols.[38] Although the Italians withdrew their submarines well before the conference and Rome later joined the Nyon agreement, the Admiralty saw the anti-piracy patrols as another opportunity to send signals to potential foes. 'It seems very desirable that when a submarine is

encountered . . .', wrote Captain Tom Phillips, the Director of Admiralty Plans Division, 'ASDIC contact with it should be held as long as possible, because such action will impress the capabilities of our destroyers on the submarine. . .'[39]

On 4 October, however, a second destroyer, HMS *Basilisk*, reportedly came under attack off Cape San Antonio without executing a successful ASDIC-led counter-attack. As with the *Havock* incident, the press reported the story before the Admiralty could complete a thorough investigation. Admiral Chatfield feared that the 'school' of critics inclined to 'cast doubts on the Admiralty's expectations as regards submarine detection' now had even more ammunition. Worse still, the Navy's inquiry proved that no submarine had been detected. An inexperienced ASDIC operator was found to be at fault. Chatfield and his staff were confronted with an unpleasant dilemma. As the Commander-in-Chief Mediterranean Fleet put it, 'if a submarine was depth charged by HMS *Basilisk* it ought to have been destroyed and if there was no submarine we cannot say so without acknowledging unreliability of ASDICs.'[40] An imperfect solution was found. On 8 October, the Admiralty announced that no attack had taken place and the First Lord told Parliament that the mistaken sighting of torpedo track (as opposed to a false ASDIC contact) had given rise to the incident.[41] Undoubtedly, a Foreign Office report describing how German newspapers had replied to the announcement with 'ironic references to sea-serpents and dolphins being mistaken for a submarines' must have caused some alarm in the Admiralty.[42]

By October 1937, the chance to stage a convincing demonstration of ASDIC's capabilities on a 'pirate' submarine without provoking the Italians had largely passed, but the Admiralty still weighed the benefits of an aggressive patrol posture. The Admiralty had instructed that destroyers should pursue with ASDIC any submerged submarines located in Spanish waters until they surfaced and identified themselves. This standing order was reviewed in light of the presence of German U-boats in Nyon patrol areas assigned to British destroyers. One official summed up the Royal Navy's options:

> On the one hand, it may be argued that if we maintain contact with one of these German submarines and hunt it for any considerable length of time, it may not be a bad thing for our prestige and may have a salutary effect on the German Admiralty. On the other hand, it is felt that once contact is made with a submerged submarine there is always a risk of a serious incident developing.[43]

The risk, the naval staff concluded, outweighed the potential benefit. Nonetheless, what is remarkable here, given the danger of a political crisis arising from a confrontation at sea, is not that the Admiralty climbed down from the more militant posture;[44] but that the top officials even *considered* forcing a U-boat to the surface at a time when the Cabinet sought a lasting détente with Hitler.

However, what this willingness to contemplate serious risks betrays is the Admiralty's realisation that ASDIC's reputation abroad was a wasting asset. In 1938–39, as war approached, senior officers became increasingly mindful of the weaknesses in Britain's submarine defences. A change in personalities contributed to this process. Admiral Sir Roger Backhouse, who had succeeded Chatfield in September 1938, was one of the few senior sailors who believed that that the Navy was placing too much faith in ASDIC.[45]

As a result, as the Admiralty worked more frantically to perfect its anti-submarine forces, its revelations to the press became more sensational. 'Naval Secrets Disclosed', read the *Manchester Guardian* headline on 17 March 1939: 'Our Anti-Submarine Defence More Advanced than Any in the World'. It informed its readers that the Admiralty had for the first time disclosed fact that 'in nine cases out of ten, under stringent tests, our submarine-hunting flotillas have been able, with modern listening gear to locate the exact position of a submerged craft without any doubt'.[46]

Yet this frenzied behaviour on the eve of the war was only the tail end of a long-standing campaign of deception. As we have seen, between the two world wars, the Admiralty understood that ASDIC's reputation was its chief asset in a deliberate yet largely passive campaign to persuade potential adversaries that echo-ranging technology had undermined the tactical effectiveness of the submarine. The question that must now be answered is whether this campaign of deception actually had any influence on the German Navy.

The place to start is Grand Admiral Dönitz's memoirs. One of the prime factors inhibiting Germany from expanding the U-boat arm before 1939, Dönitz recalled, was the stream of false information on ASDIC emanating from London. It generated uncertainty at all levels about the operational value of the U-boat. So powerful was the 'inferiority complex', that when Captain Dönitz took command of the first U-boat flotilla in 1935, he made it one of his chief aims to eradicate such views among his crews.[47] There is some truth here. In September 1939 Dönitz found it necessary to attack the reputation of British anti-submarine technology in his meeting with Hitler. Not surprisingly, Dönitz did not trace the origins of this German failure to see through the British deception. To do so here, it is necessary first to examine the performance of German naval intelligence, and, second, the nature of German research on underwater acoustics.

Between the two world wars, German naval intelligence[48] failed to penetrate the secrecy surrounding ASDIC and, consequently, senior German naval officers were badly informed about ASDIC's true capabilities. From 1926 to 1932, for instance, less than 12 intelligence reports were filed by the department responsible for U-boat development. One undated circular simply stated that 'the British have a much improved system [of detection] which is kept very secret'.[49] The problem was not a lack of inquisitiveness. A Vickers marketing prospectus on 'The Depth Charge as a Naval Weapon', for example, was scrutinised closely for clues about the quality of British hydrophones.[50] Even a dull Admiralty Fleet Order 'Submarine Detector Branch Reorganisation' appears to have been of interest.[51] The German problem was a lack of first-rate sources of intelligence.

In this respect, the British decision to isolate ASDIC from the commercial sector had paid off. In a review of what was known about the types and performance of underwater detection devices in service with other navies, dated August 1933, the *Kriegsmarine* had good intelligence on those states that had had commercial dealings with the two leading German hydrophone firms, *Atlas Werke* of Bremen and *Electroacustic Kommanditgesellschaft* (later simply Elac GmbH) of Kiel. Technical specifications appear in the review for the systems deployed by Italy, Russia, Spain, Sweden, Poland, Denmark, Greece and the South American countries. In contrast, very little was known about American, Japanese

and French technology. As for ASDIC, the review simply stated that the apparatus was now installed for sea trials on British surface and sub-surface units.[52]

Although one document from 1938 referred to an informant (*V-mann*) in London, it appears that most German intelligence was gleaned from newspapers, naval and academic periodicals, tests with commercial echo-sounding devices purchased from French and American firms, and informal conversations with British naval officers. Most of the information culled from these sources provided clues, but no concrete technical or performance data. Take, for instance, intelligence obtained from the reports of two visits to Chatham by technical experts during 'Navy Week'. The first from 1932 – only six months after the German Navy had first become aware of ASDIC – and the second from 1936. During the first visit, the German agent confirmed the existence of ASDIC by reading the labels on various instruments. On the bridge of a destroyer, for example, he saw a voice-pipe marked 'ASDIC Cabinet'. The German also learned – by employing the less than sophisticated intelligence gathering technique of approaching a group of talkative British Petty Officers and inquiring 'what a funny word is it, ASDIC, what does it mean?' – that ASDIC was a gyro-stabilised echo-ranger used to locate submerged submarines. Apart from a few interesting but inconclusive technical clues, the agent discovered nothing else of substance.[53] In 1936, the second expert did not achieve much more on his visit to Chatham. He located the compartment containing the ASDIC set on one destroyer and he saw a display of advanced quartz valves.[54]

In other words, enough information about ASDIC was obtainable from available sources to intrigue the Germans and to stimulate speculation about its design and performance, but little else. In this connection, it is interesting to note that German analysis of the British press recognised that ASDIC's inflated reputation was being used to 'soothe' public fears about the Nazi U-boat danger, yet at the same time the essence of these inflated claims went unchallenged. Oddly enough, German thinking appears to have followed the logic that the Royal Navy would not make 'strenuous efforts' at keeping ASDIC a secret unless the device's operational performance warranted such efforts.[55] Of course, the German technical analysts were not fooled by the British ruse of code-naming quartz *asdicvite*. They also assumed reasonably that ASDIC stood for 'Anti-Submarine Direction Control'. But on the technical details, the record is less distinguished. German experts grossly overestimated ASDIC's effective range. Although they had a good understanding of quartz transducers, the *Kriegsmarine* appears to have had no knowledge about the other two key components that gave Britain the global lead in echo-ranging: namely, the streamlined dome to house and protect the transducer at high speed and the Electro-chemical range recorder to produce a visual plot of the ASDIC hunt.[56]

However, German intelligence should not be judged by an unreasonable standard. Short of a masterful stroke of espionage, obtaining the features of ASDIC was a tall order. British naval intelligence, by way of comparison, had failed to obtain similar data on sonar development in the US Navy.[57] Nevertheless, there is compelling evidence of a serious German intelligence failure. The fact that the communications and intelligence departments of the German Naval Command did not launch a concerted intelligence gathering effort on this 'extraordinarily important question' related to U-boat warfare *until* the summer of 1939 is in itself convincing. The scale of this belated effort, moreover,

is indicative of huge gaps in German knowledge. Its primary aim was to discover the frequency of its ultra-sonic beam as the first step in the production of ASDIC counter-measures. The *Abwehr* was instructed to penetrate the circle of naval officers and civilian experts involved in ASDIC research and development. British warships on courtesy visits to neutral ports were also to be targeted by agents. Likewise, the German Navy planned to send a specially equipped U-boat or trawler to shadow British destroyers during exercises off Gibraltar or Malta in the hope of recording ASDIC signals.[58]

What made this German intelligence failure all the more severe was the state of the German research into underwater acoustics. Unlike the British, who specialised in *active* echo-ranging to perfect ASDIC, the Germans focused on *passive* listening to produce hydrophones for U-boats.[59] The Germans, naturally, were far behind the British in echo-ranging. Two important results followed from this inferiority. First, German technical backwardness helps to explain why German naval officers were so willing to accept the assumption of British technological supremacy. Second, German naval intelligence was denied the benefit of a parallel research programme against which incoming information on ASDIC could be tested. In addition, U-boats for experimental purposes in underwater detection were not available until after 1935 due to the Treaty of Versailles. This was a very serious handicap. British documents frequently refer to the necessity of test submarines for experimental work.[60] Of course, the *Kriegsmarine* circumvented the Versailles Treaty by taking U-boat research abroad, but Spain and Finland did not authorise German hydrophone tests until 1929 and 1931. Significantly, the German Naval Command's Communication Test Department concluded from these trials that 'at best we have just now reached the English point in underwater sound detection development at the end of the [1914–18] war'.[61]

The prevailing Anglo-German balance of knowledge, and accessibility to that knowledge by commercial means, can best be illustrated if we examine the outcome of a proposal for a limited technical exchange between the navies in 1936. The Germans desired, among other things, that experts from both navies should be permitted to inspect each others' underwater detection gear. Even under supervision, a single visit by a technically competent observer to a complete ASDIC set would have supplied the German Navy with more technical knowledge than any other source open to them. Naturally, the Admiralty refused. 'The German Naval Attaché has suggested that British Officers might wish to inspect German Hydrophone equipment; whilst appreciating this suggestion', the Director of Naval Intelligence informed the German Naval Command, 'it cannot be accepted as no corresponding facilities can be afforded for the inspection of British equipment'. Although the Royal Navy was in an inferior position relative to the *Kriegsmarine* because it had abandoned hydrophone research in 1927, there was no need for the Admiralty to compromise the secrets of ASDIC to obtain an insight into the state of German technology. Instead, in early 1937, Naval Intelligence Division simply purchased on the open market from *Atlas Werke*, the producers of the German Navy's most advanced hydrophone, the *Gruppenhorchgeräte*. Although it was designed to assist U-boats in locating targets, the Royal Navy tested it as an aid to submarine hunting and, not surprisingly, determined it to be inferior to ASDIC in this role.[62]

Having examined the way in which the Royal Navy projected and capitalised on ASDIC's image and the reasons why the German Navy was vulnerable to this

deception, this essay will now return to the issue of its impact on the *Kriegsmarine*. Disentangling the effect of the British deception from the larger framework of factors that shaped German U-boat policy is very difficult but not impossible.[63]

For instance, it can be argued, as Dönitz did, that ASDIC's reputation was one of the primary reasons why German admirals underestimated the potential of the U-boat. One could protest that they simply seized upon ASDIC to bolster long-held preconceptions about the supremacy of surface warships. Of course such preconceptions existed. Admiral Raeder, the head of the *Kriegsmarine,* dubbed the U-boat as the weapon of the 'weak'. More generally, as historians have long known, the collective ambitions of the German naval officer corps were focused on replacing Britain as the global seapower – and thus ran the formula 'a U-boat power is not a [global] sea-power'.[64] Yet deceptions work best when the deceiver is *predisposed* to embrace the false message.[65] In this respect, the British emphasis on the 'march of science' in submarine detection resonated powerfully in Germany. In an annual series of theoretical studies (*Winterarbeiten*) written by experienced U-boat commanders between the wars, the premise that underwater locating had swung the technological balance between attack and defence significantly in favour of the latter was frequently expressed.[66]

Good intelligence would have overturned this assumption. It would have also alerted German submariners long before 1939 to the gaps in Britain's defences which they exploited with stunning success in the opening phases of the war. Indeed, it is worth considering the counter-factual. Had Admiral Raeder had a truly accurate picture of the prevailing tactical balance in 1938–39, he might then have realised that the *prompt* expansion of the U-boat arm offered perhaps a fleeting opportunity to cripple Britain while it was vulnerable.[67] Blocking such time-critical calculations by inducing uncertainty in the minds of German naval strategists was the chief accomplishment of the British campaign of deception founded on ASDIC.[68]

One question that demands an answer is why did Dönitz's faith in the U-boat's war-winning potential remain unshaken? Certainly, he did not share the predilection of his fellow officers (and military planners more generally) for 'worst case' assumptions. In his memoirs, he recalled that 'I did not consider that the efficient working of ASDIC had been proved, and in any case I had no intention of allowing myself to be intimidated by British disclosures'.[69] Part of this faith was based on sound tactical analysis and the results of tactical exercises at sea. By the end 1937, he had concluded that advances in radio would permit U-boats to overwhelm convoys in co-ordinated attacks, especially at night on the surface. And he had determined that the unreliability of echo-ranging owing to varying sea conditions would permit submerged U-boats to escape counter-attack.[70] But part of the explanation lies in deeper, less rational calculations. Dönitz defined himself as a 'U-boat man' to the core.[71] Only defeatism and 'Marxism' on the home-front, he wrote in 1939, had prevented the U-boats from overthrowing British seapower in 1918. With a relentless, single-minded vindictiveness, he pursued a reversal of that decision to the bitter end.[72]

During 1938–39, however, against a background of uncertainty about ASDIC sustained by a lack of good intelligence, the formal debate in the *Kriegsmarine* revolved around the prospect of a technological or tactical answer to ASDIC. Rear Admiral Werner Fürbringer, a World War I U-boat commander who did much between

the wars to advance U-boat training and design, believed that the Royal Navy had neutralised the U-boat as a commerce raider with ASDIC. Britain's supremacy in surface warships and superior geo-strategic position, however, called for another German operational 'surprise' equivalent to the unrestricted U-boat campaign of 1917. Short of the arrival of U-boats 'immune' to detection by ASDIC, a development which appeared to Admiral Fürbringer to be very remote, some other revolutionary form of 'commerce destroyer' that could operate in co-operation with naval air forces had to be found. He had in mind the experimental and, ultimately, unworkable Engelmann boat – a thirty-knot surface-skimming boat with a very low surface profile, armed with guns and torpedoes.[73]

What is striking about Fürbringer's analysis is his willingness, in the absence of positive knowledge one way or another, to concede to ASDIC mastery in the technological competition below the surface. Dönitz protested. Although he conceded that ASDIC had emerged since the end of the last war as a 'dangerous enemy', he optimistically argued that 'we can count on the early availability of protection for the U-boat against underwater location'. The surprise that Fürbringer correctly sought, according to Dönitz, would come in the technological form of the ASDIC-immune U-boat and in the tactical form of the 'wolf pack'. In April 1939, he even advocated a German campaign of deception to delude the Admiralty into a false sense of security:

> Judging from the tone of English press, one is supposed to believe that England is now equal to the U-boat menace due to the emergence of underwater location. It must be our goal under all circumstances that they should continue to believe this. For England, the location-immune U-boat and co-operative U-boat tactics must come as a surprise.[74]

Again, it is worth posing the counterfactual here to show the value of the British deception founded on the reputation of ASDIC. Had the German navy obtained good technical intelligence on ASDIC's true capabilities, then technical familiarity would have bred the sort of operational contempt Dönitz expressed much earlier. Consequently, German countermeasures to ASDIC might have arrived much sooner than they in fact did. It was not until February 1938 that the Naval Command began to develop them in a serious fashion. In July, in an attempt to inject a sense of urgency, Admiral Rolf Carls, head of the fleet, backed Dònitz's demand for an acceleration in the production of '*countermeasures* against [underwater] locating, so that the value of the U-boat arm does not decline'.[75] Although alarms, acoustic torpedoes to destroy ASDIC escorts and decoys were all on the drawing board, it is worth looking briefly at the case of sound-absorbent coatings for U-boat hulls to illustrate the general point. The Admiralty's Director of Scientific Research hit upon the idea first in 1921.[76] The idea of special coatings to absorb ASDIC beams appears first in German documents in 1938. The Technical University of Berlin began work on the project that year, but operationally useful results did not arrive until 1944.[77] In armaments competitions, timing counts. And, as a result of the belief that there was no ready answer to ASDIC,[78] sustained by a lack of intelligence and the British deception, the *Kriegsmarine* got off to a slow start that was to hobble it until the end of the war.

At any rate, when a senior committee of German naval officers began planning for war against Britain after September 1938, it was agreed that the U-boat alone could not be decisive. Its key document advocated 'cruiser warfare' (*Kreuzerkrieg*) as the method to deliver a lethal blow to Britain's oceanic lines of supply. The German Navy's top planners looked to the 'pocket' battleship (*Panzerschiff*) and the light cruiser as the principle commerce raiders, not the U-boat.[79] Of course Dönitz disagreed. But another seasoned and respected submariner articulated the more widely held expectation. Admiral Fürbringer told his colleagues that 'every English convoy . . . will be served by defensive forces, fully capable of destroying with certainty any attacking U-boat, even under the surface'.[80] To sum up: it is much more than mere co-incidence that this German expectation of Britain's anti-submarine defences matched the false image cultivated by the Admiralty long before the outbreak of World War II.

Notes

1 Kriegstagebuch, Führer der Unterseeboote, 28 Sept. 1939, PG30247, [Microfilm] Reel 1047, N[aval] H[istorical] B[ranch], Captured Enemy Documents Section, Ministry of Defence London].

2 D.K. Brown, 'Atlantic Escorts', in S. Howarth and D. Law (eds.) *The Battle of the Atlantic, 1939–45* (Annapolis: Naval Inst. Press 1995) pp. 452–75.

3 Dönitz, 'The Building-up of the U-Boat Arm', 1 Sept. 1939, in *Fuehrer Conferences on Naval Affairs 1939–1945,* Foreword by J.P. Mallmann Showell (Trowbridge: Greenhill 1990). Dönitz was correct given the tactical situation prevailing in 1939, but the steady strengthening of Allied anti-submarine defences and blockade counter-measures would as the war progressed manage the U-boat threat. See M. Milner, 'The Battle of the Atlantic', *Journal of Strategic Studies* 13/1 (March 1990) pp. 45–66.

4 See for example W. Murray, 'Neither Navy Was Ready', *United States Naval Institute Proceedings* 107 (1981) and H.H. Herwig, 'Innovation Ignored: The Submarine Problem Germany, Britain and the United States, 1919–1939', in A.R. Millett and W. Murray (eds.), *Military Innovation in the Interwar Period* (Cambridge: CUP 1997) pp. 227–63. Herwig rightly points out that, in respect to the U-boat and naval warfare in general, the Germans 'failed to innovate in the larger sense'.

5 W. Hackmann, *Seek and Strike: Sonar, Antisubmarine Warfare and the Royal Navy 1914–1954* (London: HMSO 1984) pp. xxxvii, 73–94, 127. On the 'myth' of the single technological breakthrough, see K. Lautenschläger, 'Technology and the Evolution of Naval Warfare', in S. Miller and S. Van Evera, *Naval and National Security* (Princeton UP 1988) pp. 173–221.

6 For a look at the problem of deception in peacetime, see M. Michalka, 'German Strategic Deception in the 1930s', Rand Note N-1557–NA, July 1980.

7 Hackmann (note 5) p. xxv.

8 For the committee under Admiral Sir William Nicholson set up to review the organisation of the Wireless and Telegraphy Department of the Signal School, see Hackmann (note 5) pp. 106–7 and p. 9 of the report in CE24202/19, ADM[iralty Documents]116/1845, [London: Public Record Office].

9 In July 1932, the Director of Admiralty Training and Staff Duties Division commented upon intelligence on US Navy sonar that 'it is well known that foreign countries have been making special efforts to obtain similar information in regard to us'. See NID025/32, ADM1/8636/37.

10 See British Naval Attaché Washington to Director of Naval Intelligence, and his 'Anti Submarine Developments and Submarine Signalling in the United States', 7 Dec. 1922, ibid.; and Director of Scientific Research, July 1923, Ibid, and Hackmann (note 5) pp. 191–2.

11 In 1927, British policy was 'to obtain by common consent the total abolition of the Submarine, or, in default, a strict limitation on the tonnage allowed to nations'. D. Henry, 'British submarine policy, 1918–39', in B. Ranft (ed.) *Technical Change and British Naval Policy, 1860–1939* (London: Hodder & Stoughton 1977) pp. 81–163.

12 Captain W.A. Egerton, Director of Plans Division, 3 March 1927, PD02791/27, ADM 1/8715/194.

13 Captain C. Cameron, Director of Torpedo Division, 13 March 1927, ibid.

14 Admiral Alan Hotham, Director of Naval Intelligence, 21 March 1927, ibid.

15 [My emphasis] Captain R.M. Bellairs, Director of Plans Division, 12 July 1929, M2912/29, ADM 116/2686. Unfortunately, the Foreign Office file on this incident, which might have shed some light on its awareness of the value of ASDIC'S reputation, did not survive the weeding process.

16 Hackmann (note 5) p. 126; Admiralty publication *Progress in Torpedo, Mining AS Measures and Chemical Warfare* 1929 edn., CB3002/29, ADM186/476.

17 'Auszüge aus dem Bericht über den Besuch der "Navy Week" 1932' in 'Sammlung England' RMW/ML/BU, Band 1, 1930–36 PG31126, Bundesarchiv-Militärarchive Freiburg im Breisgau [hereafter BA/MA] RM20/1748.

18 Ibid.

19 E. Rössler, *The U-Boat: The Evolution and Technical History of German Submarines* (London: Arms & Armour Press 1981) pp. 88–98 and A. Saville, 'The Development of the German U-Boat Arm, 1919–1935', Ph.D. Thesis, University of Washington, 1963.

20 See for example Department of Naval Construction, Ship's Covers (Foreign Submarines), No. 439, National Maritime Museum, London. This volume contains technical intelligence about various German U-boat types from 1925 onwards. See for example folios 21 and 21A, 'German built Spanish Submarine', 1932, NID841/32, which contains rough sketches and design details of the boat, and folio 26, 'Specifications for a 250 ton submarine', 9 Jan. 1933, NID0476/32, which describes the details of the Spanish and Finnish U-boats. See also Director of Naval Intelligence, 9 June 1933, M01653/33 and 22 July 1933, M02138/33, ADM116/2945. In Section 2 of 'Naval Intelligence Report: Germany', 28 Aug. 1936, NID1517/36, ADM178/137, the Naval Intelligence Department enumerates accurately the dates, types, and locations of boats built by IvS before 1933.

21 See 'Submarine Doomed?', *US Naval Institute Proceedings*, 58, 355 (Sept., 1932) pp. 1370–1 and 'Anti-Submarine Work', *US Naval Institute Proceedings*, 58, 356 (Oct. 1932) pp. 1522.

22 The issue is discussed in 'Auszüge aus dem Bericht über den Besuch der "Navy Week" 1932' in 'Sammlung England' RMW/ML/BU, Band 1, 1930–36 PG31126, BA/MA, RM20/1748. In fact, the search by ASDIC equipped destroyers was 'severely handicapped' on account of the 'bottom sweep' engaging old wrecks and parts of old wrecks. See the report of Rear Admiral Submarines 25 Feb. 1932, NO. 120/D, in 'Loss of HM S/M 'M2'', NL715/32, ADM116/2909.

23 Captain E. Wassner, German naval attaché, London, report no. 743 of 26 Nov. 1934, in 'Sammlung England' RWM/ML/BU, Band 2 1934–6, PG31127, BA/MA, RM20/1749.

24 British naval attaché, Berlin, to Director of Naval Intelligence, 26 Nov. 1934, C8064/2134/18, FO371/17765.

25 H. C. Bywater, naval correspondent, *The Daily Telegraph*, 25, 28 April and 8 May 1935. For a selection of the newspaper coverage, see Chatham House Press Cuttings [Collection, 1924–39, Royal Institute of International Affairs, London] Reel 501, Section 1. On Bywater, see W.H. Honan, *Bywater: The Man Who Invented the War in the Pacific* (London: Futura 1990).

26 Sir B. Eyres-Monsell, First Lord of the Admiralty, Oral Answers, 25 June 1935, Parliamentary Debates, Fifth Series, Vol. 303, cols. 948–9.

27 *Daily Telegraph* 15, 16, 21 Sept. 1936. A similar story appeared in *The Morning Post* in April 1935.

28 The information on the German hydrophone actually came from an Admiralty source. See Admiral G. Simpson, *Periscope View* (London: Macmillan 1972) pp. 63–5.

29 Lord Stanley, Navy Estimates Debate, 16 Mar. 1936, Parliamentary Debates, Fifth Series, Vol. 310, cols. 70, 117 and 124. His remarks were reported in *The Times*, 17 March 1936. In June 1936, Admiral Chatfield had attempted to mitigate the impact of domestic criticism on public confidence at home and opinion abroad by inviting Winston Churchill, a critic of naval policy in the Commons, to Portland for a demonstration of ASDIC. See S. Roskill, *Naval Policy between the Wars: The Period of Reluctant Rearmament, 1930–39* (London: Collins 1976) pp. 227–8.

30 Hackmann (note 5) pp. 197–221.

31 *Progress in Torpedo, Mining, A/S Measures, and Chemical Warfare* 1937 edn. CB3002/37, ADM186/541. On the conceptual and bureaucratic factors contributing to a misreading of ASDIC exercise results,

see G.D. Franklin, 'A Breakdown in Communication: Britain's Over Estimation of ASDIC's Capabilities in the 1930s', *The Mariner's Mirror* 84 (1998) pp. 204–14.

32 W.C. Frank Jr, 'Politico-Military Deception at Sea in the Spanish Civil War, 1936–39', *Intelligence and National Security* 5/3 (July 1990) pp. 84–112.

33 'Defence against Submarine Attack', 24 March 1937, Paper No. 1318, CAB[inet Documents]4/26, [London: Public Record Office].

34 Committee of Imperial Defence, minutes, 292nd Meeting, 15 April 1937, CAB2/6.

35 Chatham House Press Cuttings, Reel 466, sections 1–2.

36 The original naval cypher is not in the file, but it is cited in PD06412/37, ADM116/3529.

37 Cabinet, 8 Sept. 1937, 34(37)3, CAB23/89.

38 P. Gretton, 'The Nyon Conference – The Naval Aspect', *English Historical Review* 90 (1975) pp. 100–13. The Nyon agreement of 14 Sept. 1937 was signed by Britain, France, the Soviet Union, Turkey, Greece, Yugoslavia, Romania, Bulgaria, and Egypt. On 21 Sept., Italy agreed to participate in the international patrols.

39 Director of Plans Division, 17 Sept. 1937, PD06412/37, ADM116/3529. Admiral Chatfield noted his approval of these remarks.

40 Admiral Chatfield to Admiral Dudley Pound, C-in-C of the Mediterranean Fleet, 5 Oct., and C-in-C Mediterranean Fleet to Admiral Chatfield, 6 Oct. 1937, PD06412/37, ADM116/3529.

41 *The Times*, 9 and 12 Oct., and 4 Nov. 1937.

42 Berlin Embassy to Foreign Office, 10 Oct. 1937, W18909/23/41, FO[reign Office]371/21361, [London: Public Record Office].

43 Head of Military Branch, Admiralty, 22 Oct. 1937, MO5624/37, ADM116/3529.

44 See the lukewarm reply of C-in-C Mediterranean, 6 Oct. 1936, and the remarks of the Head of the Military Branch Admiralty, 22 Oct. 1937, in PD06412/37 and M05624, ADM116/3529.

45 See Sir Stanley Goodall, Director of Naval Construction, Diaries, entry for 8 May 1933, MS52786, British Library, London. It reads 'Backhouse thinks we are placing too much faith in ASDIC (he is right as usual): all the same it is comforting to think that the submarine may be hunted when submerged.'

46 The headline is from *The Manchester Guardian*, 17 March 1939, reporting the speech of the Admiralty Secretary in the House of Commons.

47 Admiral K. Dönitz, *Memoirs: Ten Years and Twenty Days* trans, by R.H. Stevens (Cleveland: World 1959) pp. 12–14, 16–7, 45, 74. Dönitz cites the following remarks of one of his former subordinates: 'The salient feature of this training year, 1935–6, was the fact that it eradicated from the minds of all the commanders and their crews the inferiority complex, which had undoubtedly been prevalent among them, and the idea that the U-boat had been mastered and rendered impotent as an instrument of war by recent highly developed anti-submarine devices.' It is surprising that Dönitz did not comment on ASDIC and its influence on German naval thinking in his Sept. 1945 essay for British Naval Intelligence. See 'Essay by Admiral Dönitz', 24 Sept. 1945, NID1/gp/10, ADM223/688.

48 German naval intelligence (sub-divisions Ale and AIII of the Naval Command Office) was divided into sub-sections responsible for situation reports, codes and signals, signals interception, and the 'Group for Foreign Navies'. In the case of technical intelligence, however, the circle of officials involved in the assessment process was much wider. It included the navy's construction, technical and scientific departments. Officials from the *Nachrichtenmittelversuchsanstalt* (NVA, Communications Test Department), for instance, assisted in the gathering and appraisal of intelligence on ASDIC.

49 See 'Nachrichten über das Ausland', 1926–32, 1/SKL IU 5–1, PG33386, Reel 283(P), NHB. The historian, however, should be cautious in extrapolating the overall state of German intelligence on foreign technical developments from this one file. Cf. Saville, 'The Development of the German U-Boat Arm, 1919–1935'.

50 The prospectus is in PG31177, BA/MA, RM20/1692 and the report is in *'Sammlung England'*, Band 1, RMW/ML/BU, 1930–36, PG31126, MA/BA, RM20/1748

51 The Admiralty Fleet Order is in 'UBootsabwehr und Horchwessen', 1929, 1/SKL lu 3–1, PG33384, Reel 283, NHB.

52 'Horchleistungen im Auslande', 18 Aug. 1933, TMJ. B. Nr. G4409 in 'U. W. – Horchanlagen an Bord' – March 1933–Feb 1935 ML/A Ivu, PG31164, RM20/1778. The German Navy also tried to obtain information on ASDIC from the Italian and Japanese navies, but with little success. Perhaps suspecting that the Italians were not entirely frank, German naval officers questioned visiting Italian submariners on the subject. The Italians claimed that everything they knew about

ASDIC they had read in the English newspapers. See Oberkommando der Kriegsmarine 'Unterrichtung italienischer U-Boot- Offiziere in Deutschland', B.-Nr. 4302/37 A IVu GKds, 23 Aug. 1937, PG489900, BA/MA, RM11/2.

53 'Auszüge aus dem Bericht über den Besuch der "Navy Week" 1932, BW G.Kds. 5949/32 in 'Sammlung England', RMW/ML/BU, Band 1 1930–36, PG31126, BA/MA, RM20/1748.

54 'Englandreise Leiter NVA (Nachrichtenmittelversuchsanstalt)' U TMI, Geheime Kommandosache Kiel, 26 Sept. 1936, in Reichswehr Ministerium – M IV – 2 'Attaché und Auslands angelegen-heiten', PG489900, BA/MA, RM11/2.

55 For instance, see Allgemeines Marineamt, 'Geheime Ubootsabwehrübungen England', 16 June 1938, Nr 1061/38, and Admiral R. Carls, Flottenkommando, to Oberkommando der Kriegsmarine, 'Erfolge der S-Anlagen', 13 July 1938, in 'Ubootsabwehr', 1 SL1 TE II-2, PG32751, NHB. The German Navy purchased and conducted tests on an echo sounding device produced by the American firm Henry Hughes & Son. According to the documents cited here, the results of these tests appeared to confirm the claims made about ASDIC in the British press.

56 Ibid and Hackmann (note 5) pp. 122–5, and Ch. 7. The German documents cite a range of 8–15 km, but ASDIC performed effectively at a range of 1.2 km.

57 See the relevant correspondence between the British naval attaché in Washington and the Admiralty, as well as the comments of the Director of Scientific Research in ADM1/8636/37. In Sept. 1932, for instance, the naval attaché reported that '. . . always with deference to any positive information, I am inclined to think that the United States Navy has not made great strides with any supersonic system of submarine detection . . .', NID025/32, ADM1/8636/37.

58 The co-ordinated effort was proposed by the Communications Department (BN) of the General Naval Office to the Intelligence and Communications Department (AIII) of the Naval Command Office on 23 May 1939. See BN to AIII, 'Engl. Ortungsgeräte Asdic', 23 May 1939; AIII, 'Besprechung über Erkundung Engl. Ortungsgeräte "Asdic"', 10 June 1939; and AIII, 'Engl. Ortungsgeräte Asdic', 15 June 1939, in 'Ubootsabwehr', 1 SKL TE 11–2, PG32751, NHB. British ASDIC operated at a frequency *range* of 14 to 26 kHz, while German set operated at 15 kHz.: Hackmann (note 5) pp. xxx–xxxi.

59 Hackmann (note 5) pp. xxiv, xxxi, 64, 192; L.E. Holt, 'The German Use of Sonic Listening', *The Journal of the Acoustical Society of America* 19 (1947), pp. 678–81. The German terms for *active* sonars were *S-Geräte* and less precisely *S-Anlagen*.

60 See for example Admiral N. Laurence, 21 Feb. 1934, PD04411/33, ADM1/9728.

61 See the file 'Ubootsabwehr und Horchwesen', 1929, 1/SKL lu 3–3, PG33384, NHB, especially 'Unterwasserhorchgeräte', 24 March 1929; and Saville, 'U-Boat Arm' (note 19) p. 373.

62 'Naval Aide Memoire handed to the German Naval Attaché in London by the Director of Naval Intelligence, 16 Dec. 1936' in Inhaltsverzeichnis der Akte Britischer Marineattache in Berlin 1936–7, BA/MA, RM 12 II/81; *Progress in Torpedo, Mining, A/S Measures, and Chemical Warfare* 1938 edn. CB3002/38, ADM186/551; cf. the account by Admiral Simpson (note 28) pp. 61–7.

63 For a discussion of the difficulties in determining when and to what degree a deception has worked, see J. Ferris, 'The Intelligence-Deception Complex: An Anatomy', *Intelligence and National Security* 4/4 (Oct. 1989) pp. 719–34.

64 The words of Admiral Assmann cited in D.C. Watt, 'Anglo-German Naval Negotiations on the Eve of the Second World War', *Journal of the Royal United Services Institute* 610–1 (1958), p. 384; H.H. Herwig, 'The Failure of German Seapower, 1914–1945: Mahan, Tirpitz, and Raeder Reconsidered', *International History Review* 10 (1988) pp. 68–105 and G. Schreiber, 'Zur Kontinuität des Groß- und Weltmachtstrebens der deutschen Marineführung', *Militärgeschichtliche Mitteilungen* 26 (1979) pp. 101–71.

65 See Michalka, 'German Strategie Deception', p. vi.

66 On the *Winterarbeiten*, see D. Horten, 'Auswertung von Ubooterfahrungen im Ersten Weltkrieg: Eine Unersuchung anhand von Winterarbeiten in der Reichsmarine 1922–1933', unpublished ms., Führungsakademie der Bundeswehr, Hamburg, 1972. Also Admiral Kurt Assmann, 'Seekriegsführung gegen England', n. d. [1938?], PG31785, Reel 1153, NHB.

67 In 1939, Admiral Raeder appointed Vice-Admiral Siemens, the former naval attaché to London 1937–39, to oversee U-boat construction. How much his exposure to British confidence in ASDIC contributed to his poor performance is open to speculation. See Rössler, *The U-Boat* (note 19) p. 122.

68 On the projection of 'uncertainty', see Michalka, 'German Strategic Deception in the 1930s', p. vi.
69 Dönitz, *Memoirs* (note 47) p. 14.
70 Captain Dönitz to Admiral Schniewind, Head of the Naval Command Office, 23 May 1939, in 'U-bootsentwichlung', 1/SKL Iu-13–1, Feb. 38 – Oct. 39 CASE GE 1362, PG33390, RM7/1469.
71 Dönitz, *Memoirs* (note 47) p. 10.
72 P. Padfield, *Dönitz: The Last Führer* (NY: Harper & Row 1984), p. 170, citing K. Dönitz, *Die U-Bootswaffe* (Berlin: Mittler & Sohn 1939) p. 45.
73 Rear Admiral Werner Fürbringer, 'Welche Entwicklungsaufgaben und welche operativen Vorbereitungen müssen heut zur Führung eines U-boots-Handelskrieges gegen England in aller erste Linie gestellt werden?', 17 May 1939, in *'U-bootsentwichlung'*, 1/SKL Iu-13–1, Feb. 38 – Oct. 39, CASE GE 1362, PG33390, BA/MA, RM7/1469.
74 'Bericht über F.d.U – Kriegspiel 1939', 13 April 1939, in ibid.
75 Captain Dönitz, 'S-Anlagen', 27 June, and Admiral R. Carls, Flottenkommando, to Oberkommando der Kriegsmarine, 'Erfolge der S-Anlagen', 13 July 1938, in *'Ubootsabwehr'*, 1/SKL TE II-2, PG32751; 'Entwicklung von U-bootsabwehrwaffen', Jan. 1938, in *'Ubootsabwehr'*, 1/SKL TE II-2, PG32750, Reel 175; 'H. L. Abwehr', 8 Feb. 1938, in *'Ubootsabwehr Allgemeines'*, 1938–39, 1 SKL Iu-12–1, PG33389, Reel 283, NHB; Rössler, *The U-Boat*, pp. 120, 144–6.
76 Director of Scientific Research, 8 Sept. 1921, A1555/21, ADM1/8609/138.
77 BN to AIII, 'Engl. Ortungsgeräte Asdic', 23 May 1939 in *'Ubootsabwehr'*, 1 SKL TE 11–2, PG32751, NHB; A. Niestlé, 'German Technical and Electronic Development', in Howarth and Law (note 2) pp. 430–51.
78 'It is accepted internationally nowadays', wrote the chief of staff of the Baltic Command, 'that there are still no countermeasures against sonar [*S-Geräte*]'. See Gruppenkommando Ost, 'KHA.', 29 Dec. 1938, in *'Ubootsabwehr'*, 1/SKL TE II-2, PG32751, NHB.
79 On the committee, see J. Dülffer, *Weimar, Hitler, und die Marine: Reichspolitik und Flottenbau, 1920–1939* (Düsseldorf: Droste 1973), pp. 471–88; M. Salewski, *Die deutsche Seekriegsleitung 1935–1945*, 3 Vols. (Frankfurt: Bernard & Graefe 1970–75), I, pp. 43–50, III, pp. 28–60.
80 Rössler (note 19) p. 120.

This page intentionally left blank

Part IV

Nuclear strategy

Introduction

The three essays in Part IV explore the extent to which the advent of nuclear weapons changed the theory and practice of strategy.

The first selection is taken from Bernard Brodie's (1909–1978) *The Absolute Weapon*, published in 1946 at the dawn of the nuclear age. In it, Brodie attempts to answer some fundamental questions about the nuclear age, such as: Would war be more or less likely in a world with atomic weapons? What would a future war look like?

Brodie argues that the atomic age represents a major discontinuity in the history of warfare that necessitates a break from classical strategic theory. He notes, for example, that it was possible (even in 1946) for existing forces, armed with atomic weapons, "to wipe out all the cities of a great nation in a single day". Moreover, because no adequate defence against atomic attack was likely, geographic distance no longer offered immunity from atomic attack. Moreover, the likelihood of nuclear retaliation meant that military superiority no longer guaranteed a nation's security.

In short, Brodie saw the advent of nuclear weapons leading to a condition of mutual deterrence. As he wrote,

> if the aggressor state must fear retaliation, it will know that even if it is the victor, it will suffer a degree of physical destruction incomparably greater than that suffered by any defeated nation in history . . . Under those circumstances, no victory . . . would be worth the price.

In his view, this should have a profound impact on strategy. As he put it, "Thus far the chief purpose of our military establishment has been to win wars. From now on its chief purpose must be to avert them."

The second selection is Albert Wohlstetter's essay, "The Delicate Balance of Terror". Wohlstetter worked with Brodie at the RAND Corporation and later taught at the University of Chicago. Wohlstetter took aim at those, like Brodie, who believed that nuclear deterrence was robust. Wohlstetter argued, by contrast, that "deterrence . . . is neither assured nor impossible but will be the product of sustained intelligent effort and hard choices, responsibly made". Whereas others emphasized the destructive power of nuclear weapons as the most important feature of the nuclear age,

Wohlstetter emphasized "the uncertainties and interactions between our own wide range of choices and the moves open to the Soviets". He believed, in other words, that strategic choice had an important role to play in nuclear calculations.

Wohlstetter argued that maintaining a stable deterrent required not only the acquisition of sufficient numbers of nuclear weapons but also their deployment in modes that would promote stability. Moreover, to be effective deterrents, they needed to pose a credible threat of retaliation. In the case of the United States, for example, they needed to survive a nuclear attack, receive permission to launch, reach enemy territory, avoid air defences and destroy their targets. In Wohlstetter's view, uncertainties with each of these tasks complicated deterrence. As he put it, "The notion that a carefully planned surprise attack can be checkmated almost effortlessly . . . is wrong and its nearly universal acceptance is terribly dangerous."

Nuclear strategy encompasses not only how nuclear weapons may be employed in crisis and war, but also efforts to prevent states and other groups from acquiring them. The third selection, by Sarah Kreps and Matthew Fuhrmann, examines whether military strikes against nuclear facilities prevent or delay states from building nuclear weapons. They argue that military efforts to stem proliferation are neither as fruitless as sceptics suggest, nor as productive as advocates claim. In fact, the historical cases suggest that attacks which have successfully delayed proliferation are those that occurred when attackers struck well before a nuclear threat was imminent.

Study questions

1   To what extent is classical strategic thought, as embodied in the writings of Clausewitz and Sun Tzu, still relevant in the nuclear age?
2   Is there a universal logic of nuclear strategy?
3   Is victory possible in nuclear war?
4   How great a threat does the spread of nuclear weapons pose?

Further reading

Adamsky, Dima, "The 1983 Nuclear Crisis: Lessons for Deterrence Theory and Practice", *Journal of Strategic Studies* 36, no. 1 (February 2013), 4–41.

Ayson, Robert, "Bargaining with Nuclear Weapons: Thomas Schelling's 'General' Concept of Stability", *Journal of Strategic Studies* 23, no. 2 (2000), pp. 48–71.

Bracken, Paul, *The Second Nuclear Age: Strategy, Danger, and the New Power Politics* (New York: Times Books, 2012).

Christensen, Thomas J. "The Meaning of the Nuclear Evolution: China's Strategic Modernization and U.S.–China Security Relations", *Journal of Strategic Studies* 35, no. 4 (August 2012), 447–487.

Freedman, Lawrence, *The Evolution of Nuclear Strategy* (New York: St Martin's Press, 1981).

Gavin, Francis J., *Nuclear Statecraft: History and Strategy in America's Atomic Age* (Ithaca, NY: Cornell University Press, 2012).

Heuser, Beatrice: "Victory in a Nuclear War? A Comparison of NATO and WTO War Aims and Strategies", *Contemporary European History* 7, no. 3 (November 1998), 311–328.

Kissinger, Henry A., *Nuclear Weapons and Foreign Policy* (New York: W.W. Norton, 1969).

Sauer, Tom, "The Second Nuclear Revolution: From Nuclear Primacy to Post-Existential Deterrence", *Journal of Strategic Studies* 32, no. 5 (October 2009), 745–767.

Second Artillery Corps of the People's Liberation Army, *Science of Second Artillery Campaigns* (Beijing, China: People's Liberation Army Press, 2004).

Steiner, Barry, "Using the Absolute Weapon: Early Ideas of Bernard Brodie on Atomic Strategy", *Journal of Strategic Studies* 7, no. 4 (1984), 365–393.

Tannenwald, Nina, "Nuclear Weapons and the Vietnam War", *Journal of Strategic Studies* 29, no. 4 (August 2006), 675–722.

Trachtenberg, Marc, *History and Strategy* (Princeton, NJ: Princeton University Press, 1991).

Zarate, Robert and Henry D. Sokolski, eds, *Nuclear Heuristics: Selected Writings of Albert and Roberta Wohlstetter* (Carlisle, PA: Army War College Strategic Studies Institute, 2009).

This page intentionally left blank

12 The absolute weapon

Bernard Brodie

Implications for military policy

Under conditions existing before the atomic bomb, it was possible to contemplate methods of air defense keeping pace with and perhaps even outdistancing the means of offense. Long-range rockets baffled the defense, but they were extremely expensive per unit for inaccurate, single-blow weapons. Against bombing aircraft, on the other hand, fighter planes and antiaircraft guns could be extremely effective. Progress in speed and altitude performance of all types of aircraft, which on the whole tends to favor the attacker, was more or less offset by technological progress in other fields where the net result tends to favor the defender (e.g., radar search and tracking, proximity-fused projectiles, etc.).

At any rate, a future war between great powers could be visualized as one in which the decisive effects of strategic bombing would be contingent upon the *cumulative effect of prolonged bombardment efforts*, which would in turn be governed by aerial battles and even whole campaigns for mastery of the air. Meanwhile—if the recent war can serve as a pattern—the older forms of warfare on land and sea would exercise a telling effect not only on the ultimate decision but on the effectiveness of the strategic bombing itself. Conversely, the strategic bombing would, as was certainly true against Germany, influence or determine the decision mainly through its effects on the ground campaigns.

The atomic bomb seems, however, to erase the pattern described above, first of all because its enormous destructive potency is bound vastly to reduce the time necessary to achieve the results which accrue from strategic bombing—and there can no longer be any dispute about the decisiveness of strategic bombing. In fact, the essential change introduced by the atomic bomb is not primarily that it will make war more violent—a city can be as effectively destroyed with TNT and incendiaries—but that it will concentrate the violence in terms of time. A world accustomed to thinking it horrible that wars should last four or five years is now appalled at the prospect that future wars may last only a few days.

One of the results of such a change would be that a far greater proportion of human lives would be lost even in relation to the greater physical damage done. The problem of alerting the population of a great city and permitting resort to air raid shelters is one thing when the destruction of that city requires the concentrated efforts of a great enemy air force; it is quite another when the job can be done by a few aircraft flying at extreme altitudes. Moreover, the feasibility of building adequate air raid shelters against the

atomic bomb is more than dubious when one considers that the New Mexico bomb, which was detonated over 100 feet above the ground, caused powerful earth tremors of an unprecedented type lasting over twenty seconds.[1] The problem merely of ventilating deep shelters, which would require the shutting out of dangerously radioactive gases, is considered by some scientists to be practically insuperable. It would appear that the only way of safeguarding the lives of city dwellers is to evacuate them from their cities entirely in periods of crisis. But such a project too entails some nearly insuperable problems.

What do the facts presented in the preceding pages add up to for our military policy? Is it worthwhile even to consider military policy as having any consequence at all in an age of atomic bombs? A good many intelligent people think not. The passionate and *exclusive* preoccupation of some scientists and laymen with proposals for "world government" and the like—in which the arguments are posed on an "or else" basis that permits no question of feasibility—argues a profound conviction that the safeguards to security formerly provided by military might are no longer of any use.

Indeed the postulates set forth and argued in the preceding chapter would seem to admit of no other conclusion. If our cities can be wiped out in a day, if there is no good reason to expect the development of specific defenses against the bomb, if all the great powers are already within striking range of each other, if even substantial superiority in numbers of aircraft and bombs offers no real security, of what possible avail can large armies and navies be? Unless we can strike first and eliminate a threat before it is realized in action—something which our national Constitution apparently forbids—we are bound to perish under attack without even an opportunity to mobilize resistance. Such at least seems to be the prevailing conception among those who, if they give any thought at all to the military implications of the bomb, content themselves with stressing its character as a weapon of aggression.

The conviction that the bomb represents the apotheosis of aggressive instruments is especially marked among the scientists who developed it. They know the bomb and its power. They also know their own limitations as producers of miracles. They are therefore much less sanguine than many laymen or military officers of their capacity to provide the instrument which will rob the bomb of its terrors. One of the most outstanding among them, Professor J. Robert Oppenheimer, has expressed himself quite forcibly on the subject:

> The pattern of the use of atomic weapons was set at Hiroshima. They are weapons of aggression, of surprise, and of terror. If they are ever used again it may well be by the thousands, or perhaps by the tens of thousands; their method of delivery may well be different, and may reflect new possibilities of interception, and the strategy of their use may well be different from what it was against an essentially defeated enemy. But it is a weapon for aggressors, and the elements of surprise and of terror are as intrinsic to it as are the fissionable nuclei.[2]

The truth of Professor Oppenheimer's statement depends on one vital but unexpressed assumption: that the nation which proposes to launch the attack will not need to fear retaliation. If it must fear retaliation, the fact that it destroys its opponent's cities some hours or even days before its own are destroyed may avail it little. It may indeed commence the evacuation of its own cities at the same moment it is hitting the enemy's

cities (to do so earlier would provoke a like move on the opponent's part) and thus present to retaliation cities which are empty. But the success even of such a move would depend on the time interval between hitting and being hit. It certainly would not save the enormous physical plant which is contained in the cities and which over any length of time is indispensable to the life of the national community. Thus the element of surprise may be less important than is generally assumed.[3]

If the aggressor state must fear retaliation, it will know that even if it is the victor it will suffer a degree of physical destruction incomparably greater than that suffered by any defeated nation of history, incomparably greater, that is, than that suffered by Germany in the recent war. Under those circumstances no victory, even if guaranteed in advance—which it never is—would be worth the price. The threat of retaliation does not have to be 100 per cent certain; it is sufficient if there is a good chance of it, or if there is belief that there is a good chance of it. The prediction is more important than the fact.

The argument that the victim of an attack might not know where the bombs are coming from is almost too preposterous to be worth answering, but it has been made so often by otherwise responsible persons that it cannot be wholly ignored. That the geographical location of the launching sites of long-range rockets may remain for a time unknown is conceivable, though unlikely, but that the identity of the attacker should remain unknown is not in modern times conceivable. The fear that one's country might suddenly be attacked in the midst of apparently profound peace has often been voiced, but, at least in the last century and a half, it has never been realized. As advancing technology makes war more horrible, it also makes the decision to resort to it more dependent on an elaborate psychological preparation. In international politics today few things are more certain than that an attack must have an antecedent hostility of obviously grave character. Especially today, when there are only two or three powers of the first rank, the identity of the major rival would be unambiguous. In fact, as Professor Jacob Viner has pointed out, it is the lack of ambiguity concerning the major rival which makes the bipolar power system so dangerous.

There is happily little disposition to believe that the atomic bomb by its mere existence and by the horror implicit in it "makes war impossible." In the sense that war is something not to be endured if any reasonable alternative remains, it has long been "impossible." But for that very reason we cannot hope that the bomb makes war impossible in the narrower sense of the word. Even without it the conditions of modern war should have been a sufficient deterrent but proved not to be such. If the atomic bomb can be used without fear of substantial retaliation in kind, it will clearly encourage aggression. So much the more reason, therefore, to take all possible steps to assure that multilateral possession of the bomb, should that prove inevitable, be attended by arrangements to make as nearly certain as possible that the aggressor who uses the bomb will have it used against him.

If such arrangements are made, the bomb cannot but prove in the net a powerful inhibition to aggression. It would make relatively little difference if one power had more bombs and were better prepared to resist them than its opponent. It would in any case undergo incalculable destruction of life and property. It is clear that there existed in the thirties a deeper and probably more generalized revulsion against war than in any other era of history. Under those circumstances the breeding of a new war required a situation

combining dictators of singular irresponsibility with a notion among them and their general staffs that aggression would be both successful and cheap. The possibility of irresponsible or desperate men again becoming rulers of powerful states cannot under the prevailing system of international politics be ruled out in the future. But it does seem possible to erase the idea—if not among madmen rulers then at least among their military supporters—that aggression will be cheap.

Thus, the first and most vital step in any American security program for the age of atomic bombs is to take measures to guarantee to ourselves in case of attack the possibility of retaliation in kind. The writer in making that statement is not for the moment concerned about who will *win* the next war in which atomic bombs are used. Thus far the chief purpose of our military establishment has been to win wars. From now on its chief purpose must be to avert them. It can have almost no other useful purpose.

Neither is the writer especially concerned with whether the guarantee of retaliation is based on national or international power. However, one cannot be unmindful of one obvious fact: for the period immediately ahead, we must evolve our plans with the knowledge that there is a vast difference between what a nation can do domestically of its own volition and on its own initiative and what it can do with respect to programs which depend on achieving agreement with other nations. Naturally, our domestic policies concerning the atomic bomb and the national defense generally should not be such as to prejudice real opportunities for achieving world security agreements of a worthwhile sort. That is an important proviso and may become a markedly restraining one.

Some means of international protection for those states which cannot protect themselves will remain as necessary in the future as it has been in the past.[4] Upon the security of such states our own security must ultimately depend. But only a great state which has taken the necessary steps to reduce its own direct vulnerability to atomic bomb attack is in a position to offer the necessary support. Reducing vulnerability is at least one way of reducing temptation to potential aggressors. And if the technological realities make reduction of vulnerability largely synonymous with preservation of striking power, that is a fact which must be faced. Under those circumstances any domestic measures which effectively guaranteed such preservation of striking power under attack would contribute to a more solid basis for the operation of an international security system.

It is necessary therefore to explore all conceivable situations where the aggressor's fear of retaliation will be at a minimum and to seek to eliminate them. The first and most obvious such situation is that in which the aggressor has a monopoly of the bombs. The United States has a monopoly today, but trusts to its reputation for benignity and—what is more impressive—its conspicuous weariness of war to still the perturbations of other powers. In any case, that special situation is bound to be short-lived. The possibility of a recurrence of monopoly in the future would seem to be restricted to a situation in which controls for the rigorous suppression of atomic bomb production had been imposed by international agreement but had been evaded or violated by one power without the knowledge of the others. Evasion or violation, to be sure, need not be due to aggressive designs. It might stem simply from a fear that other nations were doing likewise and a desire to be on the safe side. Nevertheless, a situation of concealed monopoly would be one of the most disastrous imaginable from the point of view of world peace

and security. It is therefore entirely reasonable to insist that any system for the international control or suppression of bomb production should include safeguards promising practically 100 per cent effectiveness.

The use of secret agents to plant bombs in all the major cities of an intended victim was discussed in the previous chapter, where it was concluded that except in port cities easily accessible to foreign ships such a mode of attack could hardly commend itself to an aggressor. Nevertheless, to the degree that such planting of bombs is reasonably possible, it suggests that one side might gain before the opening of hostilities an enormous advantage in the *deployment* of its bombs. Clearly such an ascendancy would contain no absolute guarantee against retaliation, unless the advantage in deployment were associated with a marked advantage in psychological preparation for resistance. But it is clear also that the relative position of two states concerning ability to use the atomic bomb depends not alone on the number of bombs in the possession of each but also on a host of other conditions, including respective positions concerning deployment of the bombs and psychological preparation against attack.

One of the most important of those conditions concerns the relative position of the rival powers in technological development, particularly as it affects the vehicle for carrying the bombs. At present the only instrument for bombardment at distances of over 200 miles is the airplane (with or without crew). The controlled rocket capable of thousands of miles of range is still very much in the future. The experience of the recent war was analyzed in the previous chapter as indicating that an inferior air force can usually penetrate the aerial defenses of its opponent so long as it is willing to accept a high loss ratio. Nevertheless, the same experience shows also that one side can be so superior quantitatively and qualitatively in both aerial offense and defense as to be able to range practically undisturbed over the enemy's territories while shutting him out largely, even if not completely, from incursions over its own. While such a disparity is likely to be of less importance in a war of atomic bombs than it has been in the past, its residual importance is by no means insignificant.[5] And in so far as the development of rockets nullifies that type of disparity in offensive power, it should be noted that the development of rockets is not likely to proceed at an equal pace among all the larger powers. One or several will far outstrip the others, depending not alone on the degree of scientific and engineering talent available to each country but also on the effort which its government causes to be channeled into such an enterprise. In any case, the possibilities of an enormous lead on the part of one power in effective use of the atomic bomb are inseparable from technological development in vehicles—at least up to a certain common level, beyond which additional development may matter little.

The consequences of a marked disparity between opponents in the spatial concentration of populations and industry are left to a separate discussion later in this chapter. But one of the aspects of the problem which might be mentioned here, particularly as it pertains to the United States, is that of having concentrated in a single city not only the main agencies of national government but also the whole of the executive branch, including the several successors to the presidency and the topmost military authorities. While an aggressor could hardly count upon destroying at one blow all the persons who might assume leadership in a crisis, he might, unless there were considerably greater geographic decentralization of national leadership than exists at present, do

enough damage with one bomb to create complete confusion in the mobilization of resistance.

It goes without saying that the governments and populations of different countries will show different levels of apprehension concerning the effects of the bomb. It might be argued that a totalitarian state would be less unready than would a democracy to see the destruction of its cities rather than yield on a crucial political question. The real political effect of such a disparity, however—if it actually exists, which is doubtful—can easily be exaggerated. *For in no case is the fear of the consequences of atomic bomb attack likely to be low.* More important is the likelihood that totalitarian countries can impose more easily on their populations than can democracies those mass movements of peoples and industries necessary to disperse urban concentrations.

The most dangerous situation of all would arise from a failure not only of the political leaders but especially of the military authorities of a nation like our own to adjust to the atomic bomb in their thinking and planning. The possibility of such a situation developing in the United States is very real and very grave. We are familiar with the example of the French General Staff, which failed to adjust in advance to the kind of warfare obtaining in 1940. There are other examples, less well-known, which lie much closer home. In all the investigations and hearings on the Pearl Harbor disaster, there has at this writing not yet been mention of a fact which is as pertinent as any—that our ships were virtually naked in respect to antiaircraft defense. They were certainly naked in comparison to what was considered necessary a brief two years later, when the close-in antiaircraft effectiveness of our older battleships was estimated by the then Chief of the Bureau of Ordnance to have increased by no less than 100 times! That achievement was in great part the redemption of past errors of omission. The admirals who had spent so many of their waking hours denying that the airplane was a grave menace to the battleship had never taken the elementary steps necessary to validate their opinions, the steps, that is, of covering their ships with as many as they could carry of the best antiaircraft guns available.

Whatever may be the specific changes indicated, it is clear that our military authorities will have to bestir themselves to a wholly unprecedented degree in revising military concepts inherited from the past. That will not be easy. They must be prepared to dismiss, as possibly irrelevant, experience gained the hard way in the recent war, during which their performance was on the whole brilliant.

Thus far there has been no public evidence that American military authorities have begun really to think in terms of atomic warfare. The test announced with such fanfare for the summer of 1946, in which some ninety-seven naval vessels will be subjected to the blast effect of atomic bombs, to a degree confirms this impression. Presumably the test is intended mainly to gauge the defensive efficacy of tactical dispersion, since there can be little doubt of the consequences to any one ship of a near burst. While such tests are certainly useful it should be recognized at the outset that they can provide no answer to the basic question of the utility of sea power in the future.

Ships at sea are in any case not among the most attractive of military targets for atomic bomb attack. Their ability to disperse makes them comparatively wasteful targets for bombs of such concentrated power and relative scarcity; their mobility makes them practically impossible to hit with super-rockets of great range; and those of the United

States Navy at least have shown themselves able, with the assistance of their own aircraft, to impose an impressively high ratio of casualties upon hostile planes endeavoring to approach them. But the question of how their own security is affected is not the essential point. *For it is still possible for navies to lose all reason for being even if they themselves remain completely immune.*

A nation which had lost most of its larger cities and thus the major part of its industrial plant might have small use for a fleet. One of the basic purposes for which a navy exists is to protect the sea-borne transportation by which the national industry imports its raw materials and exports its finished commodities to the battle lines. Moreover, without the national industrial plant to service it, the fleet would shortly find itself without the means to function. In a word, the strategic issues posed by the atomic bomb transcend all tactical issues, and the 1946 test and the controversy which will inevitably follow it will no doubt serve to becloud that basic point.

Outlines of a defense program in the atomic age

What are the criteria by which we can appraise realistic military thinking in the age of atomic bombs? The burden of the answer will depend primarily on whether one accepts as true the several postulates presented and argued in the previous chapter. One might go further and say that since none of them is obviously untrue, no program of military preparedness which fails to consider the likelihood of their being true can be regarded as comprehensive or even reasonably adequate.

It is of course always possible that the world may see another major war in which the atomic bomb is not used. The awful menace to both parties of a reciprocal use of the bomb may prevent the resort to that weapon by either side, even if it does not prevent the outbreak of hostilities. But even so, the shadow of the atomic bomb would so govern the strategic and tactical dispositions of either side as to create a wholly novel form of war. The kind of spatial concentrations of force by which in the past great decisions have been achieved would be considered too risky. The whole economy of war would be affected, for even if the governments were willing to assume responsibility for keeping the urban populations in their homes, the spontaneous exodus of those populations from the cities might reach such proportions as to make it difficult to service the machines of war. The conclusion is inescapable that war will be vastly different because of the atomic bomb whether or not the bomb is actually used.

But let us now consider the degree of probability inherent in each of the three main situations which might follow from a failure to prevent a major war. These three situations may be listed as follows:

(a) a war fought without atomic bombs or other forms of radioactive energy;
(b) a war in which atomic bombs were introduced only considerably after the outbreak of hostilities;
(c) a war in which atomic bombs were used at or near the very outset of hostilities.

We are assuming that this hypothetical conflict occurs at a time when each of the opposing sides possesses at least the "know-how" of bomb production, a situation which,

as argued in the previous chapter, approximates the realities to be expected not more than five to ten years hence.

Under such conditions the situation described under (a) above could obtain only as a result of a mutual fear of retaliation, perhaps supported by international instruments outlawing the bomb as a weapon of war. It would *not be* likely to result from the operation of an international system for the suppression of bomb production, since such a system would almost certainly not survive the outbreak of a major war. If such a system were in fact effective at the opening of hostilities, the situation resulting would be far more likely to fall under (b) than under (a), unless the war were very short. For the race to get the bomb would not be an even one, and the side which got it first in quantity would be under enormous temptation to use it before the opponent had it. Of course, it is more reasonable to assume that an international situation which had so far deteriorated as to permit the outbreak of a major war would have long since seen the collapse of whatever arrangements for bomb production control had previously been imposed, unless the conflict were indeed precipitated by an exercise of sanctions for the violation of such a control system.

Thus we see that a war in which atomic bombs are not used is more likely to occur if both sides have the bombs in quantity from the beginning than if neither side has it at the outset or if only one side has it.[6] But how likely is it to occur? Since the prime motive in refraining from using it would be fear of retaliation, it is difficult to see why a fear of reciprocal use should be strong enough to prevent resort to the bomb without being strong enough to prevent the outbreak of war in the first place.

Of course, the bomb may act as a powerful deterrent to direct aggression against great powers without preventing the political crises out of which wars generally develop. In a world in which great wars become "inevitable" as a result of aggression by great powers upon weak neighbors, the bomb may easily have the contrary effect. Hitler made a good many bloodless gains by mere blackmail, in which he relied heavily on the too obvious horror of modern war among the great nations which might have opposed him earlier. A comparable kind of blackmail in the future may actually find its encouragement in the existence of the atomic bomb. Horror of its implications is not likely to be spread evenly, at least not in the form of overt expression. The result may be a series of *faits accomplis* eventuating in that final deterioration of international affairs in which war, however terrible, can no longer be avoided.

Nevertheless, once hostilities broke out, the pressures to use the bomb might swiftly reach unbearable proportions. One side or the other would feel that its relative position respecting ability to use the bomb might deteriorate as the war progressed, and that if it failed to use the bomb while it had the chance it might not have the chance later on. The side which was decidedly weaker in terms of industrial capacity for war would be inclined to use it in order to equalize the situation on a lower common level of capacity—for it is clear that the side with the more elaborate and intricate industrial system would, other things being equal, be more disadvantaged by mutual use of the bomb than its opponent. In so far as those "other things" were not equal, the disparities involved would also militate for the use of the bomb by one side or the other. And hovering over the situation from beginning to end would be the intolerable fear on each side that the enemy might at any moment resort to this dreaded weapon, a fear which might very well stimulate an anticipatory reaction.

Some observers in considering the chances of effectively outlawing the atomic bomb have taken a good deal of comfort from the fact that poison gases were not used, or at least not used on any considerable scale, during the recent war. There is little warrant, however, for assuming that the two problems are analogous. Apart from the fact that the recent war presents only a single case and argues little for the experience of another war even with respect to gas, it is clear that poison gas and atomic bombs represent two wholly different orders of magnitude in military utility. The existence of the treaty outlawing gas was important, but at least equally important was the conviction in the minds of the military policy-makers that TNT bombs and tanks of gelatinized gaso-line—with which the gas bombs would have had to compete in airplane carrying capacity—were just as effective as gas if not more so. Both sides were prepared not only to retaliate with gas against gas attack but also to neutralize with gas masks and "decontamination units" the chemicals to which they might be exposed. There is visible today no comparable neutralization agent for atomic bombs.

Neither side in the recent war wished to bear the onus for violation of the obligation not to use gas when such violation promised no particular military advantage. But, unlike gas, the atomic bomb can scarcely fail to have fundamental or decisive effects if used at all. That is not to say that any effort to outlaw use of the bomb is arrant nonsense, since such outlawry might prove the indispensable crystallizer of a state of balance which operates against use of the bomb. But without the existence of the state of balance—in terms of reciprocal ability to retaliate in kind if the bomb is used—any treaty purposing to outlaw the bomb in war would have thrust upon it a burden far heavier than such a treaty can normally bear.

What do these conclusions mean concerning the defense preparations of a nation like the United States? In answering this question, it is necessary first to anticipate the argu-ment that "the best defense is a strong offense," an argument which it is now fashionable to link with animadversions on the "Maginot complex." In so far as this doctrine becomes dogma, it may prejudice the security interests of the country and of the world. Although the doctrine is basically true as a general proposition, especially when applied to hostili-ties already under way, the political facts of life concerning the United States govern-ment under its present Constitution make it most probable that if war comes we will receive the first blow rather than deliver it. Thus, our most urgent military problem is to reorganize ourselves to survive a vastly more destructive "Pearl Harbor" than occurred in 1941. Otherwise we shall not be able to take the offensive at all.

The atomic bomb will be introduced into the conflict only on a gigantic scale. No belligerent would be stupid enough, in opening itself to reprisals in kind, to use only a few bombs. The initial stages of the attack will certainly involve hundreds of the bombs, more likely thousands of them. Unless the argument of Postulates II and IV in the previous chapter is wholly preposterous, the target state will have little chance of effectively halting or fending off the attack. If its defenses are highly efficient it may down nine planes out of every ten attacking, but it will suffer the destruction of its cities. That destruction may be accomplished in a day, or it may take a week or more. But there will be no opportunity to incorporate the strength residing in the cities, whether in the form of industry or personnel, into the forces of resistance or counterattack. *The ability to fight back after an atomic bomb attack will depend on the degree to which*

the armed forces have made themselves independent of the urban communities and their industries for supply and support.

The proposition just made is the basic proposition of atomic bomb warfare, and it is the one which our military authorities continue consistently to overlook. They continue to speak in terms of peacetime military establishments which are simply cadres and which are expected to undergo an enormous but slow expansion *after* the outbreak of hostilities.[7] Therein lies the essence of what may be called "pre-atomic thinking." The idea which must be driven home above all else is that a military establishment which is expected to fight on after the nation has undergone atomic bomb attack must be prepared to fight with the men already mobilized and with the equipment already in the arsenals. And those arsenals must be in caves in the wilderness. The cities will be vast catastrophe areas, and the normal channels of transportation and communications will be in unutterable confusion. The rural areas and the smaller towns, though perhaps not struck directly, will be in varying degrees of disorganization as a result of the collapse of the metropolitan centers with which their economies are intertwined.

Naturally, the actual degree of disorganization in both the struck and non-struck areas will depend on the degree to which we provide beforehand against the event. A good deal can be done in the way of decentralization and reorganization of vital industries and services to avoid complete paralysis of the nation. More will be said on this subject later in the present chapter. But the idea that a nation which had undergone days or weeks of atomic bomb attack would be able to achieve a production for war purposes even remotely comparable in character and magnitude to American production in World War II simply does not make sense. The war of atomic bombs must be fought with stockpiles of arms in finished or semifinished state. A superiority in raw materials will be about as important as a superiority in gold resources was in World War II—though it was not so long ago that gold was the essential sinew of war.

All that is being presumed here is the kind of destruction which Germany actually underwent in the last year of the second World War, only telescoped in time and considerably multiplied in magnitude. If such a presumption is held to be unduly alarmist, the burden of proof must lie in the discovery of basic errors in the argument of the preceding chapter. The essence of that argument is simply that what Germany suffered because of her inferiority in the air may now well be suffered in greater degree and in far less time, so long as atomic bombs are used, even by the power which enjoys air superiority. And while the armed forces must still prepare against the possibility that atomic bombs will not be used in another war—a situation which might permit full mobilization of the national resources in the traditional manner—they must be at least equally ready to fight a war in which no such grand mobilization is permitted.

The forces which will carry on the war after a large-scale atomic bomb attack may be divided into three main categories according to their respective functions. The first category will comprise the force reserved for the retaliatory attacks with atomic bombs; the second will have the mission of invading and occupying enemy territory; and the third will have the purpose of resisting enemy invasion and of organizing relief for devastated areas. Professional military officers will perhaps be less disturbed at the absence of any distinction between land, sea, and air forces than they will be at the sharp distinction

between offensive and defensive functions in the latter two categories. In the past it was more or less the same army which was either on the offensive or the defensive, depending on its strength and on the current fortunes of war, but, for reasons which will presently be made clear, a much sharper distinction between offensive and defensive forces seems to be in prospect for the future.

The force delegated to the retaliatory attack with atomic bombs will have to be maintained in rather sharp isolation from the national community. Its functions must not be compromised in the slightest by the demands for relief of struck areas. Whether its operations are with aircraft or rockets or both, it will have to be spread over a large number of widely dispersed reservations, each of considerable area, in which the bombs and their carriers are secreted and as far as possible protected by storage underground. These reservations should have a completely independent system of inter-communications, and the commander of the force should have a sufficient autonomy of authority to be able to act as soon as he has established with certainty the fact that the country is being hit with atomic bombs. The supreme command may by then have been eliminated, or its communications disrupted.

Before discussing the character of the force set apart for the job of invasion, it is necessary to consider whether invasion and occupation remain indispensable to victory in an era of atomic energy. Certain scientists have argued privately that they are not, that a nation committing aggression with atomic bombs would have so paralyzed its opponent as to make invasion wholly superfluous. It might be alleged that such an argument does not give due credit to the atomic bomb, since it neglects the necessity of preventing or minimizing retaliation in kind. If the experience with the V-1 and V-2 launching sites in World War II means anything at all, it indicates that only occupation of such sites will finally prevent their being used. Perhaps the greater destructiveness of the atomic bomb as compared with the bombs used against the V-1 and V-2 sites will make an essential difference in this respect, but it should be remembered that thousands of tons of bombs were dropped on those sites. At any rate, it is unlikely that any aggressor will be able to count upon eliminating with his initial blow the enemy's entire means of retaliation. If he knows the location of the crucial areas, he will seek to have his troops descend upon and seize them.

But even apart from the question of direct retaliation with atomic bombs, invasion to consolidate the effects of an atomic bomb attack will still be necessary. A nation which had inflicted enormous human and material damage upon another would find it intolerable to stop short of eliciting from the latter an acknowledgment of defeat implemented by a readiness to accept control. Wars, in other words, are fought to be terminated, and to be terminated definitely.

To be sure, a nation may admit defeat and agree to occupation before its homeland is actually invaded, as the Japanese did. But it by no means follows that such will be the rule. Japan was completely defeated strategically before the atomic bombs were used against her. She not only lacked means of retaliation with that particular weapon but was without hope of being able to take aggressive action of any kind or of ameliorating her desperate military position to the slightest degree. There is no reason to suppose that a nation which had made reasonable preparations for war with atomic bombs would inevitably be in a mood to surrender after suffering the first blow.

An invasion designed to prevent large-scale retaliation with atomic bombs to any considerable degree would have to be incredibly swift and sufficiently powerful to over-whelm instantly any opposition. Moreover, it would have to descend in one fell swoop upon points scattered throughout the length and breadth of the enemy territory. The question arises whether such an operation is possible, especially across broad water barriers, against any great power which is not completely asleep and which has sizable armed forces at its disposal. It is clear that existing types of forces can be much more easily reorganized to resist the kind of invasion here envisaged than to enable them to conduct so rapid an offensive.

Extreme swiftness of invasion would demand aircraft for transport and supply rather than surface vessels guarded by sea power. But the necessity of speed does not itself create the conditions under which an invasion solely by air can be successful, especially against large and well-organized forces deployed over considerable space. In the recent war the specialized air-borne infantry divisions comprised a very small proportion of the armies of each of the belligerents. The bases from which they were launched were in every case relatively close to the objective, and except at Crete their mission was always to co-operate with much larger forces approaching by land or sea. To be sure, if the air forces are relieved by the atomic bomb of the burden of devoting great numbers of aircraft to strategic bombing with ordinary bombs, they will be able to accept to a much greater extent than heretofore the task of serving as a medium of transport and supply for the infantry. But it should be noticed that the enormous extension of range for bombing purposes which the atomic bomb makes possible does not apply to the transport of troops and supplies.[8] For such operations distance remains a formidable barrier.

The invasion and occupation of a great country solely or even chiefly by air would be an incredibly difficult task even if one assumes a minimum of air opposition. The magnitude of the preparations necessary for such an operation might make very dubious the chance of achieving the required measure of surprise. It may well prove that the difficulty of consolidating by invasion the advantages gained through atomic bomb attack may act as an added and perhaps decisive deterrent to launching such an attack, especially since delay or failure would make retaliation all the more probable. But all hinges on the quality of preparation of the intended victim. If it has not prepared itself for atomic bomb warfare, the initial devastating attack will undoubtedly paralyze it and make its conquest easy even by a small invading force. And if it has not prepared itself for such warfare its helplessness will no doubt be sufficiently apparent before the event to invite aggression.

It is obvious that the force set apart for invasion or counter invasion purposes will have to be relatively small, completely professional, and trained to the uttermost. But there must also be a very large force ready to resist and defeat invasion by the enemy. Here is the place for the citizen army, though it too must be comprised of trained men. There will be no time for training once the atomic bomb is used. Perhaps the old ideal of the "minute man" with his musket over his fireplace will be resurrected, in suitably modernized form. In any case, provision must be made for instant mobilization of trained reserves, for a maximum decentralization of arms and supply depots and of tactical authority, and for flexibility of operation. The trend towards greater mobility in

land forces will have to be enormously accelerated, and strategic concentrations will have to be achieved in ways which avoid a high spatial density of military forces. And it must be again repeated, the arms, supplies, and vehicles of transportation to be depended upon are those which are *stockpiled* in as secure a manner as possible.

At this point it should be clear how drastic are the changes in character, equipment, and outlook which the traditional armed forces must undergo if they are to act as real deterrents to aggression in an age of atomic bombs. Whether or not the ideas presented above are entirely valid, they may perhaps stimulate those to whom our military security is entrusted to a more rigorous and better-informed kind of analysis which will reach sounder conclusions.

In the above discussion the reader will no doubt observe the absence of any considerable role for the Navy. And it is indisputable that the traditional concepts of military security which this country has developed over the last fifty years—in which the Navy was quite correctly avowed to be our "first line of defense"—seem due for revision, or at least for reconsideration.

For in the main sea power has throughout history proved decisive only when it was applied and exploited over a period of considerable time, and in atomic bomb warfare that time may well be lacking. Where wars are destined to be short, superior sea power may prove wholly useless. The French naval superiority over Prussia in 1870 did not prevent the collapse of the French armies in a few months, nor did Anglo-French naval superiority in 1940 prevent an even quicker conquest of France—one which might very well have ended the war.

World War II was in fact destined to prove the conflict in which sea power reached the culmination of its influence on history. The greatest of air wars and the one which saw the most titanic battles of all time on land was also the greatest of naval wars. It could hardly have been otherwise in a war which was truly global, where the pooling of resources of the great Allies depended upon their ability to traverse the highways of the seas and where American men and materials played a decisive part in remote theaters which could be reached with the requisite burdens only by ships. That period of greatest influence of sea power coincided with the emergence of the United States as the unrivaled first sea power of the world. But in many respects all this mighty power seems at the moment of its greatest glory to have become redundant.

Yet certain vital tasks may remain for fleets to perform even in a war of atomic bombs. One function which a superior fleet serves at every moment of its existence—and which therefore requires no time for its application—is the defense of coasts against sea-borne invasion. Only since the surrender of Germany, which made available to us the observations of members of the German High Command, has the public been made aware of something which had previously been obvious only to close students of the war—that it was the Royal Navy even more than the R.A.F. which kept Hitler from leaping across the Channel in 1940. The R.A.F. was too inferior to the Luftwaffe to have stopped an invasion by itself, and was important largely as a means of protecting the ships which the British would have interposed against any invasion attempt.

We have noticed that if swiftness were essential to the execution of any invasion plan, the invader would be obliged to depend mainly, if not exclusively, on transport by air. But we also observed that the difficulties in the way of such an enterprise might be such

as to make it quite impossible of achievement. For the overseas movement of armies of any size and especially of their larger arms and supplies, sea-borne transportation proved quite indispensable even in an era when gigantic air forces had been built up by fully mobilized countries over four years of war. The difference in weight-carrying capacity between ships and planes is altogether too great to permit us to expect that it will become militarily unimportant in fifty years or more.[9] A force which is able to keep the enemy from using the seas is bound to remain for a long time an enormously important defense against overseas invasion.

However, the defense of coasts against sea-borne invasion is something which powerful and superior air forces are also able to carry out, though perhaps somewhat less reliably. If that were the sole function remaining to the Navy, the maintenance of huge fleets would hardly be justified. One must consider also the possible offensive value of a fleet which has atomic bombs at its disposal.

It was argued in the previous chapter that the atomic bomb enormously extends the effective range of bombing aircraft, and that even today the cities of every great power are inside effective bombing range of planes based on the territories of any other great power. The future development of aircraft will no doubt make bombing at six and seven thousand miles range even more feasible than it is today, and the tendency towards even higher cruising altitudes will ultimately bring planes above the levels where weather hazards are an important barrier to long flights. The ability to bring one's planes relatively close to the target before launching them, as naval carrier forces are able to do, must certainly diminish in military importance. But it will not wholly cease to be important, even for atomic bombs. Apparently today's carrier-borne aircraft cannot carry the atomic bomb, but no one would predict that they will remain unable to do so. And if the emphasis in vehicles is shifted from aircraft to long-range rockets, there will again be an enormous advantage in having one's missiles close to the target. It must be remembered that in so far as advanced bases remain useful for atomic bomb attack, navies are indispensable for their security and maintenance.

Even more important, perhaps, is the fact that a fleet at sea is not easily located and even less easily destroyed. The ability to retaliate if attacked is certainly enhanced by having a bomb-launching base which cannot be plotted on a map. A fleet armed with atomic bombs which had disappeared into the vastness of the seas during a crisis would be just one additional element to give pause to an aggressor. It must, however, be again repeated that the possession of such a fleet or of advanced bases will probably *not be essential* to the execution of bombing missions at extreme ranges.

If there should be a war in which atomic bombs were not used—a possibility which must always be taken into account—the fleet would retain all the functions it has ever exercised. We know also that there are certain policing obligations entailed in various American commitments, especially that of the United Nations Organization. The idea of using atomic bombs for such policing operations, as some have advocated, is not only callous in the extreme but stupid. Even general bombing with ordinary bombs is the worst possible way to coerce states of relatively low military power, for it combines the maximum of indiscriminate destruction with the minimum of direct control.[10]

At any rate, if the United States retains a strong navy, as it no doubt will, we should insist upon that navy retaining the maximum flexibility and adaptability to new

conditions. The public can assist in this process by examining critically any effort of the service to freeze naval armaments at high quantitative levels, for there is nothing more deadening to technological progress especially in the navy than the maintenance in active or reserve commission of a number of ships far exceeding any current needs. It is not primarily a question of how much money is spent or how much manpower is absorbed but rather of how effciently money and manpower are being utilized. Money spent on keeping in commission ships built for the last war is money which might be devoted to additional research and experimentation, and existing ships discourage new construction. For that matter, money spent on maintaining a huge navy is perhaps money taken from other services and other instruments of defense which may be of far greater relative importance in the early stages of a future crisis than they have been in the past.

Notes

1 *Time*, January 28, 1946, p. 75.
2 "Atomic Weapons and the Crisis in Science," *Saturday Review of Literature*, November 24, 1945, p. 10.
3 This idea was first suggested and elaborated by Professor Jacob Viner. See his paper: "The Implications of the Atomic Bomb for International Relations," *Proceedings of the American Philosophical Society*, Vol. 90, No. 1 (January 29, 1946), pp. 53?. The present writer desires at this point to express his indebtedness to Professor Viner for numerous other suggestions and ideas gained during the course of several personal conversations.
4 The argument has been made that once the middle or small powers have atomic bombs they will have restored to them the ability to resist effectively the aggressions of their great-power neighbors—an ability which otherwise has well-nigh disappeared. This is of course an interesting speculation on which no final answer is forthcoming. It is true that a small power, while admitting that it could not win a war against a great neighbor, could nevertheless threaten to use the bomb as a penalizing instrument if it were invaded. But it is also true that the great-power aggressor could make counterthreats concerning its conduct while occupying the country which had used atomic bombs against it. It seems to this writer highly unlikely that a small power would dare threaten use of the bomb against a great neighbor which was sure to overrun it quickly once hostilities began. It seems, on the contrary, much more likely that Denmark's course in the second World War will be widely emulated if there is a third. The aggressor will not "atomize" a city occupied by its own troops, and the opposing belligerent will hesitate to destroy by such an unselective weapon the cities of an occupied friendly state.
5 It was stated in the previous chapter, p. 30, that before we can consider a defense against atomic bombs effective, "the frustration of the attack for any given target area must be complete." The emphasis in that statement is on a specific and limited target area such as a small or medium size city. For a whole nation containing many cities such absolute standards are obviously inapplicable. The requirements for a "reasonably effective" defense would still be far higher than would be the case with ordinary TNT bombs, but it would certainly not have to reach 100 per cent frustration of the attack. All of which says little more than that a nation can absorb more atomic bombs than can a single city.
6 One can almost rule out too the possibility that war would break out between two great powers where both knew that only one of them had the bombs in quantity. It is one of the old maxims of power politics that *c'est une crime de faire la guerre sans compter sur la supériorité*, and certainly a monopoly of atomic bombs would be a sufficiently clear definition of superiority to dissuade the other side from accepting the gage of war unless directly attacked.
7 General H.H. Arnold's *Third Report to the Secretary of War* is in general outstanding for the breadth of vision it displays. Yet one finds in it statements like the following: "An Air Force is always verging on obsolescence and, in time of peace, its size and replacement rate will always be inadequate to meet the full demands of war. Military Air Power should, therefore, be measured to a large extent

by the ability of the existing Air Force to absorb in time of emergency the increase required by war together with new ideas and techniques" (page 62). Elsewhere in the *Report* (page 65) similar remarks are made about the expansion of personnel which, it is presumed, will always follow upon the outbreak of hostilities. But *nowhere* in the *Report* is the possibility envisaged that in a war which began with an atomic bomb attack there might be no opportunity for the expansion or even replacement either of planes or personnel. The same omission, needless to say, is discovered in practically all the pronouncements of top-ranking Army and Navy officers concerning their own plans for the future.

8 See above, pp. 36–40.

9 See Bernard Brodie, *A Guide to Naval Strategy*, 3rd ed., Princeton, Princeton University Press, 1944, p. 215.

10 There has been a good deal of confusion between automaticity and immediacy in the execution of sanctions. Those who stress the importance of bringing military pressure to bear *at once* in the case of aggression are as a rule really less concerned with having sanctions imposed quickly than they are with having them appear certain. To be sure, the atomic bomb gives the necessity for quickness of military response a wholly new meaning; but in the kinds of aggression with which the UNO is now set up to deal, atomic bombs are not likely to be important for a very long time.

13 The delicate balance of terror

Albert Wohlstetter

The first shock administered by the Soviet launching of Sputnik has almost dissipated. The flurry of statements and investigations and improvised responses has died down, leaving a small residue: a slight increase in the schedule of bomber and ballistic missile production, with a resulting small increment in our defense expenditures for the current fiscal year; a considerable enthusiasm for space travel; and some stirrings of interest in the teaching of mathematics and physics in the secondary schools. Western defense policy has almost returned to the level of activity and the emphasis suited to the basic assumptions which were controlling before Sputnik.

One of the most important of these assumptions—that a general thermonuclear war is extremely unlikely—is held in common by most of the critics of our defense policy as well as by its proponents. Because of its crucial rôle in the Western strategy of defense, I should like to examine the stability of the thermonuclear balance which, it is generally supposed, would make aggression irrational or even insane. The balance, I believe, is in fact precarious, and this fact has critical implications for policy. Deterrence in the 1960s is neither assured nor impossible but will be the product of sustained intelligent effort and hard choices, responsibly made. As a major illustration important both for defense and foreign policy, I shall treat the particularly stringent conditions for deterrence which affect forces based close to the enemy, whether they are U.S. forces or those of our allies, under single or joint control. I shall comment also on the inadequacy as well as the necessity of deterrence, on the problem of accidental outbreak of war, and on disarmament.[1]

The presumed automatic balance

I emphasize that requirements for deterrence are stringent. We have heard so much about the atomic stalemate and the receding probability of war which it has produced that this may strike the reader as something of an exaggeration. Is deterrence a necessary consequence of both sides having a nuclear delivery capability, and is all-out war nearly obsolete? Is mutual extinction the only outcome of a general war? This belief, frequently expressed by references to Mr. Oppenheimer's simile of the two scorpions in a bottle, is perhaps the prevalent one. It is held by a very eminent and diverse group of people—in England by Sir Winston Churchill, P.M.S. Blackett, Sir John Slessor, Admiral Buzzard and many others; in France by such figures as Raymond Aron, General Gallois and General Gazin; in this country by the titular heads of both parties as well as almost all

writers on military and foreign affairs, by both Henry Kissinger and his critic, James E. King, Jr., and by George Kennan as well as Dean Acheson. Mr. Kennan refers to American concern about surprise attack as simply obsessive;[2] and many people have drawn the consequence of the stalemate as has Blackett, who states: "If it is in fact true, as most current opinion holds, that strategic air power has abolished global war, then an urgent problem for the West is to assess how little effort must be put into it to keep global war abolished."[3] If peace were founded firmly on mutual terror, and mutual terror on symmetrical nuclear capabilities, this would be, as Churchill has said, "a melancholy paradox;" none the less a most comforting one.

Deterrence, however, is not automatic. While feasible, it will be much harder to achieve in the 1960s than is generally believed. One of the most disturbing features of current opinion is the underestimation of this difficulty. This is due partly to a misconstruction of the technological race as a problem in matching striking forces, partly to a wishful analysis of the Soviet ability to strike first.

Since Sputnik, the United States has made several moves to assure the world (that is, the enemy, but more especially our allies and ourselves) that we will match or overmatch Soviet technology and, specifically, Soviet offense technology. We have, for example, accelerated the bomber and ballistic missile programs, in particular the intermediate-range ballistic missiles. The problem has been conceived as more or better bombers—or rockets; or Sputniks; or engineers. This has meant confusing deterrence with matching or exceeding the enemy's ability to strike first. Matching weapons, however, misconstrues the nature of the technological race. Not, as is frequently said, because only a few bombs owned by the defender can make aggression fruitless, but because even many might not. One outmoded A-bomb dropped from an obsolete bomber might destroy a great many supersonic jets and ballistic missiles. To deter an attack means being able to strike back in spite of it. It means, in other words, a capability to strike second. In the last year or two there has been a growing awareness of the importance of the distinction between a "strike-first" and a "strike-second" capability, but little, if any, recognition of the implications of this distinction for the balance of terror theory.

Where the published writings have not simply underestimated Soviet capabilities and the advantages of a first strike, they have in general placed artificial constraints on the Soviet use of the capabilities attributed to them. They assume, for example, that the enemy will attack in mass over the Arctic through our Distant Early Warning line, with bombers refueled over Canada—all resulting in plenty of warning. Most hopefully, it is sometimes assumed that such attacks will be preceded by days of visible preparations for moving ground troops. Such assumptions suggest that the Soviet leaders will be rather bumbling or, better, cooperative. However attractive it may be for us to narrow Soviet alternatives to these, they would be low in the order of preference of any reasonable Russians planning war.

The quantitative nature of the problem and the uncertainties

In treating Soviet strategies it is important to consider Soviet rather than Western advantage and to consider the strategy of both sides quantitatively. The effectiveness of our

own choices will depend on a most complex numerical interaction of Soviet and Western plans. Unfortunately, both the privileged and unprivileged information on these matters is precarious. As a result, competent people have been led into critical error in evaluating the prospects for deterrence. Western journalists have greatly overestimated the difficulties of a Soviet surprise attack with thermonuclear weapons and vastly underestimated the complexity of the Western problem of retaliation.

One intelligent commentator, Richard Rovere, recently expressed the common view: "If the Russians had ten thousand warheads and a missile for each, and we had ten hydrogen bombs and ten obsolete bombers, . . . aggression would still be a folly that would appeal only to an insane adventurer." Mr. Rovere's example is plausible because it assumes implicitly that the defender's hydrogen bombs will with certainty be visited on the aggressor; then the damage done by the ten bombs seems terrible enough for deterrence, and any more would be simply redundant. This is the basis for the common view. The example raises questions, even assuming the delivery of the ten weapons. For instance, the targets aimed at in retaliation might be sheltered and a quite modest civil defense could hold within tolerable limits the damage done to such city targets by ten delivered bombs. But the essential point is that the weapons would not be very likely to reach their targets. Even if the bombers were dispersed at ten different points, and protected by shelters so blast resistant as to stand up anywhere outside the lip of the bomb crater—even inside the fire ball itself—the chances of one of these bombers surviving the huge attack directed at it would be on the order of one in a million. (This calculation takes account of the unreliability and inaccuracy of the missile.) And the damage done by the small minority of these ten planes that might be in the air at the time of the attack, armed and ready to run the gauntlet of an alert air defense system, if not zero, would be very small indeed compared to damage that Russia has suffered in the past. For Mr. Rovere, like many other writers on this subject, numerical superiority is not important at all.

For Joseph Alsop, on the other hand, it is important, but the superiority is on our side. Mr. Alsop recently enunciated as one of the four rules of nuclear war: "The aggressor's problem is astronomically difficult; and the aggressor requires an overwhelming superiority of force."[4] There are, he believes, no fewer than 400 SAC bases in the NATO nations alone and many more elsewhere, all of which would have to be attacked in a very short space of time. The "thousands of coördinated air sorties and/or missile firings," he concludes, are not feasible. Mr. Alsop's argument is numerical and has the virtue of demonstrating that at least the relative numbers are important. But the numbers he uses are very wide of the mark. He overestimates the number of such bases by a factor of more than ten,[5] and in any case, missile firings on the scale of a thousand or more involve costs that are by no means out of proportion, given the strategic budgets of the great powers. Whether or not thousands are needed depends on the yield and the accuracy of the enemy missiles, something about which it would be a great mistake for us to display confidence.

Perhaps the first step in dispelling the nearly universal optimism about the stability of deterrence would be to recognize the difficulties in analyzing the uncertainties and interactions between our own wide range of choices and the moves open to the Soviets. On our side we must consider an enormous variety of strategic weapons which might compose our force, and for each of these several alternative methods of basing

and operation. These are the choices that determine whether a weapons system will have any genuine capability in the realistic circumstances of a war. Besides the B-47E and the B-52 bombers which are in the United States strategic force now, alternatives will include the B-52G (a longer-range version of the B-52); the Mach 2 B-58A bomber and a "growth" version of it; the Mach 3 B-70 bomber; a nuclear-powered bomber possibly carrying long-range air-to-surface missiles; the Dynasoar, a manned glide-rocket; the Thor and the Jupiter, liquid-fueled intermediate-range ballistic missiles; the Snark intercontinental cruise missile; the Atlas and the Titan intercontinental ballistic missiles; the submarine-launched Polaris and Atlantis rockets; and Minuteman, one potential solid-fueled successor to the Thor and Titan; possibly unmanned bombardment satellites; and many others which are not yet gleams in anyone's eye and some that are just that.

The difficulty of describing in a brief article the best mixture of weapons for the long-term future beginning in 1960, their base requirements, their potentiality for stabilizing or upsetting the balance among the great powers, and their implications for the alliance, is not just a matter of space or the constraint of security. The difficulty in fact stems from some rather basic insecurities. These matters are wildly uncertain; we are talking about weapons and vehicles that are some time off and, even if the precise performances currently hoped for and claimed by contractors were in the public domain, it would be a good idea to doubt them.

Recently some of my colleagues picked their way through the graveyard of early claims about various missiles and aircraft: their dates of availability, costs and perform-ance. These claims are seldom revisited or talked about: *de mortuis nil nisi bonum*. The errors were large and almost always in one direction. And the less we knew, the more hopeful we were. Accordingly the missiles benefited in particular. For example, the esti-mated cost of one missile increased by a factor of over 50—from about $35,000 in 1949 to some $2 million in 1957. This uncertainty is critical. Some but not all of the systems listed can be chosen and the problem of choice is essentially quantitative. The complex-ities of the problem, if they were more widely understood, would discourage the oracular confidence of writers on the subject of deterrence.

Some of the complexities can be suggested by referring to the successive obstacles to be hurdled by any system providing a capability to strike second, that is, to strike back. Such deterrent systems must have (a) a stable, "steady-state" peacetime operation within feasible budgets (besides the logistic and operational costs there are, for example, prob-lems of false alarms and accidents). They must have also the ability (b) to survive enemy attacks, (c) to make and communicate the decision to retaliate, (d) to reach enemy terri-tory with fuel enough to complete their mission, (e) to penetrate enemy active defenses, that is, fighters and surface-to-air missiles, and (f) to destroy the target in spite of any "passive" civil defense in the form of dispersal or protective construction or evacuation of the target itself.

Within limits the enemy is free to use his offensive and defensive forces so as to exploit the weaknesses of each of our systems. He will also be free, within limits, in the 1960s to choose that composition of forces which will make life as difficult as possible for the various systems we might select. It would be quite wrong to assume that we have the same degree of flexibility or that the uncertainties I have described affect a totalitarian

aggressor and the party attacked equally. A totalitarian country can preserve secrecy about the capabilities and disposition of his forces very much better than a Western democracy. And the aggressor has, among other enormous advantages of the first strike, the ability to weigh continually our performance at each of the six barriers and to choose that precise time and circumstance for attack which will reduce uncertainty. It is important not to confuse our uncertainty with his. Strangely enough, some military commentators have not made this distinction and have founded their certainty of deterrence on the fact simply that there are uncertainties.

Unwarranted optimism is displayed not only in the writings of journalists but in the more analytic writings of professionals. The recent writings of General Gallois[6] parallel rather closely Mr. Alsop's faulty numerical proof that surprise attack is astronomically difficult—except that Gallois' "simple arithmetic," to borrow his own phrase, turns essentially on some assumptions which are at once inexplicit and extremely optimistic with respect to the blast resistance of dispersed missile sites subjected to attack from relatively close range.[7] Mr. Blackett's recent book, "Atomic Weapons and East-West Relations," illustrates the hazards confronting a most able analyst in dealing with the piecemeal information available to the general public. Mr. Blackett, a Nobel prize-winning physicist with wartime experience in military operations research, lucidly summarized the public information available when he was writing in 1956 on weapons for all-out war. But much of his analysis was based on the assumption that H-bombs could not be made small enough to be carried in an intercontinental missile. It is now widely known that intercontinental ballistic missiles will have hydrogen warheads, and this fact, a secret at the time, invalidates Mr. Blackett's calculations and, I might say, much of his optimism on the stability of the balance of terror. In sum, one of the serious obstacles to any widespread rational judgment on these matters of high policy is that critical elements of the problem *have* to be protected by secrecy. However, some of the principal conclusions about deterrence in the early 1960s can be fairly firmly based, and based on public information.

The delicacy of the balance of terror

The most important conclusion is that we must expect a vast increase in the weight of attack which the Soviets can deliver with little warning, and the growth of a significant Russian capability for an essentially warningless attack. As a result, strategic deterrence, while feasible, will be extremely difficult to achieve, and at critical junctures in the 1960s, we may not have the power to deter attack. Whether we have it or not will depend on some difficult strategic choices as to the future composition of the deterrent forces as well as hard choices on its basing, operations and defense.

Manned bombers will continue to make up the predominant part of our striking force in the early 1960s. None of the popular remedies for their defense will suffice—not, for example, mere increase of alertness (which will be offset by the Soviet's increasing capability for attack without significant warning), nor simple dispersal or sheltering alone or mobility taken by itself, nor a mere piling up of interceptors and defense missiles around SAC bases. Especially extravagant expectations have been placed on the airborne alert—an extreme form of defense by mobility. The impression is rather widespread that

one-third of the SAC bombers are in the air and ready for combat at all times.[8] This belief is belied by the public record. According to the Symington Committee Hearings in 1956, our bombers averaged 31 hours of flying per month, which is about 4 percent of the average 732-hour month. An Air Force representative expressed the hope that within a couple of years, with an increase in the ratio of crews to aircraft, the bombers would reach 45 hours of flight per month—which is 6 percent. This 4 to 6 percent of the force includes bombers partially fueled and without bombs. It is, moreover, only an average, admitting variance down as well as up. Some increase in the number of armed bombers aloft is to be expected. However, for the current generation of bombers, which have been designed for speed and range rather than endurance, a continuous air patrol for one-third of the force would be extremely expensive.

On the other hand, it would be unwise to look for miracles in the new weapons systems, which by the mid-1960s may constitute a considerable portion of the United States force. After the Thor, Atlas and Titan there are a number of promising developments. The solid-fueled rockets, Minuteman and Polaris, promise in particular to be extremely significant components of the deterrent force. Today they are being touted as making the problem of deterrence easy to solve and, in fact, guaranteeing its solution. But none of the new developments in vehicles is likely to do that. For the complex job of deterrence, they all have limitations. The unvaryingly immoderate claims for each new weapons system should make us wary of the latest "technological breakthroughs." Only a very short time ago the ballistic missile itself was supposed to be intrinsically invulnerable on the ground. It is now more generally understood that its survival is likely to depend on a variety of choices in its defense.

It is hard to talk with confidence about the mid and late 1960s. A systematic study of an optimal or a good deterrent force which considered all the major factors affecting choice and dealt adequately with the uncertainties would be a formidable task. In lieu of this, I shall mention briefly why none of the many systems available or projected dominates the others in any obvious way. My comments will take the form of a swift run-through of the characteristic advantages and disadvantages of various strategic systems at each of the six successive hurdles mentioned earlier.

The first hurdle to be surmounted is the attainment of a stable, steady-state peacetime operation. Systems which depend for their survival on extreme decentralization of controls, as may be the case with large-scale dispersal and some of the mobile weapons, raise problems of accidents and over a long period of peacetime operation this leads in turn to serious political problems. Systems relying on extensive movement by land, perhaps by truck caravan, are an obvious example; the introduction of these on European roads, as is sometimes suggested, would raise grave questions for the governments of some of our allies. Any extensive increase in the armed air alert will increase the hazard of accident and intensify the concern already expressed among our allies. Some of the proposals for bombardment satellites may involve such hazards of unintended bomb release as to make them out of the question.

The cost to buy and operate various weapons systems must be seriously considered. Some systems buy their ability to negotiate a given hurdle—say, surviving the enemy attack—only at prohibitive cost. Then the number that can be bought out of a given budget will be small and this will affect the relative performance of competing systems at

various other hurdles, for example penetrating enemy defenses. Some of the relevant cost comparisons, then, are between competing systems; others concern the extra costs to the enemy of canceling an additional expenditure of our own. For example, some dispersal is essential, though usually it is expensive; if the dispersed bases are within a warning net, dispersal can help to provide warning against some sorts of attack, since it forces the attacker to increase the size of his raid and so makes it more liable to detection as well as somewhat harder to coördinate. But as the sole or principal defense of our offensive force, dispersal has only a brief useful life and can be justified financially only up to a point. For against our costs of construction, maintenance and operation of an additional base must be set the enemy's much lower costs of delivering one extra weapon. And, in general, any feasible degree of dispersal leaves a considerable concentration of value at a single target point. For example, a squadron of heavy bombers costing, with their associated tankers and penetration aids, perhaps $500,000,000 over five years, might be eliminated, if it were otherwise unprotected, by an enemy intercontinental ballistic missile costing perhaps $16,000,000. After making allowance for the unreliability and inaccuracy of the missile, this means a ratio of some ten for one or better. To achieve safety by *brute* numbers in so unfavorable a competition is not likely to be viable economically or politically. However, a viable peacetime operation is only the first hurdle to be surmounted.

At the second hurdle—surviving the enemy offense—ground alert systems placed deep within a warning net look good against a manned bomber attack, much less good against intercontinental ballistic missiles, and not good at all against ballistic missiles launched from the sea. In the last case, systems such as the Minuteman, which may be sheltered and dispersed as well as alert, would do well. Systems involving launching platforms which are mobile and concealed, such as Polaris submarines, have particular advantage for surviving an enemy offense.

However, there is a third hurdle to be surmounted—namely that of making the decision to retaliate and communicating it. Here, Polaris, the combat air patrol of B-525, and in fact all of the mobile platforms—under water, on the surface, in the air and above the air—have severe problems. Long distance communication may be jammed and, most important, communication centers may be destroyed.

At the fourth hurdle—ability to reach enemy territory with fuel enough to complete the mission—several of our short-legged systems have operational problems such as coördination with tankers and using bases close to the enemy. For a good many years to come, up to the mid-1960s in fact, this will be a formidable hurdle for the greater part of our deterrent force. The next section of this article deals with this problem at some length.

The fifth hurdle is the aggressor's long-range interceptors and close-in missile defenses. To get past these might require large numbers of planes and missiles. (If the high cost of overcoming an earlier obstacle—using extreme dispersal or airborne alert or the like—limits the number of planes or missiles bought, our capability is likely to be penalized disproportionately here.) Or getting through may involve carrying heavy loads of radar decoys, electronic jammers and other aids to defense penetration. For example, vehicles like Minuteman and Polaris, which were made small to facilitate dispersal or mobility, may suffer here because they can carry fewer penetration aids.

At the final hurdle—destroying the target in spite of the passive defenses that may protect it—low-payload and low-accuracy systems, such as Minuteman and Polaris, may be frustrated by blast-resistant shelters. For example, five half-megaton weapons with an average inaccuracy of two miles might be expected to destroy half the population of a city of 900,000, spread over 40 square miles, provided the inhabitants are without shelters. But if they are provided with shelters capable of resisting over-pressures of 100 pounds per square inch, approximately 60 such weapons would be required; and deep rock shelters might force the total up to over a thousand.

Prizes for a retaliatory capability are not distributed for getting over one of these jumps. A system must get over all six. I hope these illustrations will suggest that assuring ourselves the power to strike back after a massive thermonuclear surprise attack is by no means as automatic as is widely believed.

In counteracting the general optimism as to the ease and, in fact, the inevitability of deterrence, I should like to avoid creating the extreme opposite impression. Deterrence demands hard, continuing, intelligent work, but it can be achieved. The job of deterring rational attack by guaranteeing great damage to an aggressor is, for example, very much less difficult than erecting a nearly airtight defense of cities in the face of full-scale thermonuclear surprise attack. Protecting manned bombers and missiles is much easier because they may be dispersed, sheltered or kept mobile, and they can respond to warning with greater speed. Mixtures of these and other defenses with complementary strengths can preserve a powerful remainder after attack. Obviously not all our bombers and missiles need to survive in order to fulfill their mission. To preserve the majority of our cities intact in the face of surprise attack is immensely more difficult, if not impossible. (This does not mean that the aggressor has the same problem in preserving his cities from retaliation by a poorly-protected, badly-damaged force. And it does not mean that *we* should not do more to limit the extent of the catastrophe to our cities in case deterrence fails. I believe we should.) Deterrence, however, provided we work at it, is feasible, and, what is more, it is a crucial objective of national policy.

What can be said, then, as to whether general war is unlikely? Would not a general thermonuclear war mean "extinction" for the aggressor as well as the defender? "Extinction" is a state that badly needs analysis. Russian casualties in World War II were more than 20,000,000. Yet Russia recovered extremely well from this catastrophe. There are several quite plausible circumstances in the future when the Russians might be quite confident of being able to limit damage to considerably less than this number—if they make sensible strategic choices and we do not. On the other hand, the risks of not striking might at some juncture appear very great to the Soviets, involving, for example, disastrous defeat in peripheral war, loss of key satellites with danger of revolt spreading—possibly to Russia itself—or fear of an attack by ourselves. Then, striking first, by surprise, would be the sensible choice for them, and from their point of view the smaller risk.

It should be clear that it is not fruitful to talk about the likelihood of general war without specifying the range of alternatives that are pressing on the aggressor and the strategic postures of both the Soviet bloc and the West. Deterrence is a matter of comparative risks. The balance is not automatic. First, since thermonuclear weapons give an enormous advantage to the aggressor, it takes great ingenuity and

realism at any given level of nuclear technology to devise a stable equilibrium. And second, this technology itself is changing with fantastic speed. Deterrence will require an urgent and continuing effort.

The uses and risks of bases close to the Soviets

It may now be useful to focus attention on the special problems of deterrent forces close to the Soviet Union. First, overseas areas have played an important rôle in the past and have a continuing though less certain rôle today. Second, the recent acceleration of production of intermediate-range ballistic missiles and the negotiation of agreements with various NATO powers for their basing and operation have given our overseas bases a renewed importance in deterring attack on the United States—or so it would appear at first blush. Third, an analysis can throw some light on the problems faced by our allies in developing an independent ability to deter all-out attack on themselves, and in this way it can clarify the much agitated question of nuclear sharing. Finally, overseas bases affect in many critical ways, political and economic as well as military, the status of the alliance.

At the end of the last decade, overseas bases appeared to be an advantageous means of achieving the radius extension needed by our short-legged bombers, of permitting them to use several axes of attack, and of increasing the number of sorties possible in the course of an extended campaign. With the growth of our own thermonuclear stockpile, it became apparent that a long campaign involving many re-uses of a large proportion of our bombers was not likely to be necessary. With the growth of a Russian nuclear-delivery capability, it became clear that this was most unlikely to be feasible.

Our overseas bases now have the disadvantage of high vulnerability. Because they are closer than the United States to the Soviet Union, they are subject to a vastly greater attack by a larger variety as well as number of vehicles. With given resources, the Soviets might deliver on nearby bases a freight of bombs with something like 50 to 100 times the yield that they could muster at intercontinental range. Missile accuracy would more than double. Because there is not much space for obtaining warning—in any case, there are no deep-warning radar nets—and, since most of our overseas bases are close to deep water from which submarines might launch missiles, the warning problem is very much more severe than for bases in the interior of the United States.

As a result, early in the 1950s the U.S. Air Force decided to recall many of our bombers to the continental United States and to use the overseas bases chiefly for re-fueling, particularly poststrike ground refueling. This reduced drastically the vulnerability of U.S. bombers and at the same time retained many of the advantages of overseas operation. For some years now SAC has been reducing the number of aircraft usually deployed overseas. The purpose is to reduce vulnerability and has little to do with any increasing radius of SAC aircraft. The early B-52 radius is roughly that of the B-36; the B-47, roughly that of the B-50 or B-29. In fact the radius limitation and therefore the basing requirements we have discussed will not change substantially for some time to come. We can talk with comparative confidence here, because the U.S. strategic force is itself largely determined for this period. Such a force changes more slowly than is generally realized. The vast majority of the force will consist of manned bombers, and most of

these will be of medium range. *Some* U.S. bombers will be able to reach *some* targets from *some* U.S. bases within the 48 states without landing on the way back. On the other hand, some bomber-target combinations are not feasible without pre-target landing (and are therefore doubtful). The Atlas, Titan and Polaris rockets, when available, can of course do without overseas bases (though the proportion of Polaris submarines kept at sea can be made larger by the use of submarine tenders based overseas). But even with the projected force of aerial tankers, the greater part of our force, which will be manned bombers, cannot be used at all in attacks on the Soviet Union without at least some use of overseas areas.

What of the bases for Thor and Jupiter, our first intermediate-range ballistic missiles? These have to be close to the enemy, and they must of course be operating bases, not merely refueling stations. The Thors and Jupiters will be continuously in range of an enormous Soviet potential for surprise attack. These installations therefore re-open; in a most acute form, some of the serious questions of ground vulnerability that were raised about six years ago in connection with our overseas bomber bases. The decision to station the Thor and Jupiter missiles overseas has been our principal public response to the Russian advances in rocketry, and perhaps our most plausible response. Because it involves our ballistic missiles it appears directly to answer the Russian rockets. Because it involves using European bases, it appears to make up for the range superiority of the Russian intercontinental missile. And most important, it directly involves the NATO powers and gives them an element of control.

There is no question that it was genuinely urgent not only to meet the Russian threat but to do so visibly, in order to save the loosening NATO alliance. Our allies were fearful that the Soviet ballistic missiles might mean that we were no longer able or willing to retaliate against the Soviet Union in case of an attack on them. We hastened to make public a reaction which would restore their confidence. This move surely appears to increase our own power to strike back, and also to give our allies a deterrent of their own, independent of our decision. It has also been argued that in this respect it merely advances the inevitable date at which our allies will acquire "modern" weapons of their own, and that it widens the range of Soviet challenges which Europe can meet. But we must face seriously the question whether this move will in fact assure either the ability to retaliate or the decision to attempt it, on the part of our allies or ourselves. And we should ask at the very least whether further expansion of this policy will buy as much retaliatory power as other ways of spending the considerable sums involved. Finally, it is important to be clear whether the Thor and Jupiter actually increase the flexibility or range of response available to our allies.

One justification for this move is that it disperses retaliatory weapons and that this is the most effective sanction against the thermonuclear aggressor. The limitations of dispersal have already been discussed, but it remains to examine the argument that over-seas bases provide *widespread* dispersal, which imposes on the aggressor insoluble problems of coördination.

There is of course something in the notion that forcing the enemy to attack many political entities increases the seriousness of his decision, but there is very little in the notion that dispersal in several countries makes the problem of destruction more difficult in the military sense. Dispersal does not require separation by the distance of

oceans—just by the lethal diameters of enemy bombs. And the task of coördinating bomber attacks on Europe and the eastern coast of the United States, say, is not appreciably more difficult than coördinating attacks on our east and west coasts. In the case of ballistic missiles, the elapsed time from firing to impact on the target can be calculated with high accuracy. Although there will be some failures and delays, times of firing can be arranged so that impact on many dispersed points is almost simultaneous—on Okinawa and the United Kingdom, for instance, as well as on California and Ohio. Moreover, it is important to keep in mind that these far-flung bases, while distant from each other and from the United States, are on the whole close to the enemy. To eliminate them, therefore, requires a smaller expenditure of resources on his part than targets at intercontinental range. For close-in targets he can use a wider variety of weapons carrying larger payloads and with higher accuracy.

The seeming appositeness of an overseas-based Thor and Jupiter as an answer to a Russian intercontinental ballistic missile stems not so much from any careful analysis of their retaliatory power under attack as from the directness of the comparison they suggest: a rocket equals a rocket, an intercontinental missile equals an intermediate-range missile based at closer range to the target. But this again mistakes the nature of the technological race. It conceives the problem of deterrence as that of simply matching or exceeding the aggressor's capability to strike first. A surprising proportion of the debate on defense policy has betrayed this confusion. Matching technological developments are useful for prestige, and such demonstrations have a vital function in preserving the alliance and in reassuring the neutral powers. But propaganda is not enough. The only reasonably certain way of maintaining a reputation for strength is to display an actual power to our friends as well as our enemies. We should ask, then, whether further expansion of the current programs for basing Thor and Jupiter is an efficient way to increase American retaliatory power. If overseas bases are considered too vulnerable for manned bombers, will not the same be true for missiles?

The basis for the hopeful impression that they will not is rather vague, including a mixture of hypothetical properties of ballistic missiles in which perhaps the dominant element is their supposedly much more rapid, "push-button" response. What needs to be considered here are the response time of such missiles (including decision, preparation and launch times), and how they are to be defended.

The decision to fire a missile with a thermonuclear warhead is much harder to make than a decision simply to start a manned aircraft on its way, with orders to return to base unless instructed to continue to its assigned target. This is the "fail-safe" procedure practised by the U.S. Air Force. In contrast, once a missile is launched, there is no method of recall or deflection which is not subject to risks of electronic or mechanical failure. Therefore such a decision must wait for much more unambiguous evidence of enemy intentions. It must and will take a longer time to make and is less likely to be made at all. Where more than one country is involved, the joint decision is harder still, since there is opportunity to disagree about the ambiguity of the evidence, as well as to reach quite different interpretations of national interest. On much less momentous matters the process of making decisions in NATO is complicated, and it should be recognized that such complexity has much to do with the genuine concern of the various NATO powers about the danger of accidentally starting World War III. Such fears will not be diminished with

the advent of I.R.B.M.s. In fact, widespread dispersion of nuclear armed missiles raises measurably the possibility of accidental war.

Second, it is quite erroneous to suppose that by contrast with manned bombers the first I.R.B.M.s can be launched almost as simply as pressing a button. Count-down procedures for early missiles are liable to interruption, and the characteristics of the liquid oxygen fuel limits the readiness of their response. Unlike JP-4, the fuel used in jet bombers, liquid oxygen cannot be held for long periods of time in these vehicles. In this respect such missiles will be *less* ready than alert bombers. Third, the smaller warning time available overseas makes more difficult any response. This includes, in particular, any active defense, not only against ballistic missile attacks but, for example, against low altitude or various circuitous attacks by manned aircraft.

Finally, passive defense by means of shelter is more difficult, given the larger bomb yields, better accuracies and larger forces available to the Russians at such close range. And if the press reports are correct, the plans for I.R.B.M. installations do not call for bomb-resistant shelters. If this is so, it should be taken into account in measuring the actual contribution of these installations to the West's retaliatory power. Viewed as a contribution to deterring all-out attack on the United States, the Thor and Jupiter bases seem unlikely to compare favorably with other alternatives. If newspaper references to hard bargaining by some of our future hosts are to be believed, it would seem that such negotiations have been conducted under misapprehensions on both sides as to the benefits to the United States.

But many proponents of the distribution of Thor and Jupiter—and possibly some of our allies—have in mind not an increase in U.S. deterrence but the development of an independent capability in several of the NATO countries to deter all-out attack against themselves. This would be a useful thing if it can be managed at supportable cost and if it does not entail the sacrifice of even more critical measures of protection. But aside from the special problems of joint control, which would affect the certainty of response adversely, precisely who their legal owner is will not affect the retaliatory power of the Thors and Jupiters one way or the other. They would not be able to deter an attack which they could not survive. It is curious that many who question the utility of American overseas bases (for example, our bomber bases in the United Kingdom) simply assume that, for our allies, possession of strategic nuclear weapons is one with deterrence.

There remains the view that the provision of these weapons will broaden the range of response open to our allies. In so far as this view rests on the belief that the intermediate-range ballistic missile is adapted to limited war, it is wide of the mark. The inaccuracy of an I.R.B.M. requires high-yield warheads, and such a combination of inaccuracy and high yield, while quite appropriate and adequate against unprotected targets in a general war, would scarcely come within even the most lax, in fact reckless, definition of limited war. Such a weapon is inappropriate for even the nuclear variety of limited war, and it is totally useless for meeting the wide variety of provocation that is well below the threshold of nuclear response. In so far as these missiles will be costly for our allies to install, operate and support, they are likely to displace a conventional capability that might be genuinely useful in limited engagements. More important, they are likely to be used as an excuse for budget cutting. In this way they will accelerate the general

trend toward dependence on all-out response and so will have the opposite effect to the one claimed.

Nevertheless, if the Thor and Jupiter have these defects, might not some future weapon be free of them? Some of these defects, of course, will be overcome in time. Solid fuels or storable liquids will eventually replace liquid oxygen, reliabilities will increase, various forms of mobility or portability will become feasible, accuracies may even be so improved that such weapons can be used in limited wars. But these developments are all years away. In consequence, the discussion will be advanced if a little more precision is given such terms as "missiles" or "modern" or "advanced weapons." We are not distributing a generic "modern" weapon with all the virtues of flexibility in varying circumstances and of invulnerability in all-out war. But even with advances in the state of the art on our side, it will remain difficult to maintain a deterrent, especially close in under the enemy's guns.

It follows that, though a wider distribution of nuclear weapons may be inevitable, or at any rate likely, and though some countries in addition to the Soviet Union and the United States may even develop an independent deterrent, it is by no means inevitable or even very likely that the power to deter all-out thermonuclear attack will be widespread. This is true even though a minor power would not need to guarantee as large a retaliation as we in order to deter attack on itself. Unfortunately, the minor powers have smaller resources as well as poorer strategic locations.[9] Mere membership in the nuclear club might carry with it prestige, as the applicants and nominees expect, but it will be rather expensive, and in time it will be clear that it does not necessarily confer any of the expected privileges enjoyed by the two charter members. The burden of deterring a general war as distinct from limited wars is still likely to be on the United States and therefore, so far as our allies are concerned, on the military alliance.

There is one final consideration. Missiles placed near the enemy, even if they could not retaliate, would have a potent capability for striking first by surprise. And it might not be easy for the enemy to discern their purpose. The existence of such a force might be a considerable provocation and in fact a dangerous one in the sense that it would place a great burden on our deterrent force which more than ever would have to guarantee extreme risks to the attacker—worse than the risks of waiting in the face of this danger. When not coupled with the ability to strike in retaliation, such a capability might suggest—erroneously, to be sure, in the case of the democracies—an intention to strike first. If so, it would tend to provoke rather than to deter general war.

I have dealt here with only one of the functions of overseas bases: their use as a support for the strategic deterrent force. They have a variety of important military, political and economic rôles which are beyond the scope of this paper. Expenditures in connection with the construction or operation of our bases, for example, are a form of economic aid and, moreover, a form that is rather palatable to the Congress. There are other functions in a central war where their importance may be very considerable and their usefulness in a limited war might be substantial.

Indeed nothing said here should suggest that deterrence is in itself an adequate strategy. The complementary requirements of a sufficient military policy cannot be discussed in detail here. Certainly they include a more serious development of power to meet limited aggression, especially with more advanced conventional weapons than

those now available. They also include more energetic provision for active and passive defenses to limit the dimensions of the catastrophe in case deterrence should fail. For example, an economically feasible shelter program might make the difference between 50,000,000 survivors and 120,000,000 survivors.

But it would be a fatal mistake to suppose that because strategic deterrence is inadequate by itself it can be dispensed with. Deterrence is not dispensable. If the picture of the world I have drawn is rather bleak, it could nonetheless be cataclysmically worse. Suppose both the United States and the Soviet Union had the power to destroy each others' retaliatory forces and society, given the opportunity to administer the opening blow. The situation would then be something like the old-fashioned Western gun duel. It would be extraordinarily risky for one side *not* to attempt to destroy the other, or to delay doing so, since it not only can emerge unscathed by striking first but this is the sole way it can reasonably hope to emerge at all. Evidently such a situation is extremely unstable. On the other hand, if it is clear that the aggressor too will suffer catastrophic damage in the event of his aggression, he then has strong reason not to attack, even though he can administer great damage. A protected retaliatory capability has a stabilizing influence not only in deterring rational attack, but also in offering every inducement to both powers to reduce the chance of accidental war.

The critics who feel that deterrence is "bankrupt" sometimes say that we stress deterrence too much. I believe this is quite wrong if it means that we are devoting too much effort to protect our power to retaliate; but I think it is quite right if it means that we have talked too much of a strategic threat as a substitute for many things it cannot replace.

Deterrence, accidents and disarmament

Up to now I have talked mainly about the problem of deterring general war, of making it improbable that an act of war will be undertaken deliberately, with a clear understanding of the consequences, that is, rationally. That such deterrence will not be easy to maintain in the 1960s simply expresses the proposition that a surprise thermonuclear attack might *not* be an irrational or insane act on the part of the aggressor. A deterrent strategy is aimed at a rational enemy. Without a deterrent, general war is likely. With it, however, war might still occur.

In order to reduce the risk of a rational act of aggression, we are being forced to undertake measures (increased alertness, dispersal, mobility) which, to a significant extent, increase the risk of an irrational or unintentional act of war. The accident problem is serious, and it would be a great mistake to dismiss the recent Soviet charges on this subject as simply part of the war of nerves. In a clear sense the great multiplication and spread of nuclear arms throughout the world, the drastic increase in the degree of readiness of these weapons, and the decrease in the time available for the decision on their use must inevitably raise the risk of accident. The B-47 accidents this year at Sidi Slimane and at Florence, S.C., and the recent Nike explosion are just a beginning. Though incidents of this sort are not themselves likely to trigger misunderstanding, they suggest the nature of the problem.

There are many sorts of accidents that could happen. There can be electronic or mechanical failures of the sort illustrated by the B-47 and Nike mishaps; there can be

aberrations of individuals, perhaps quite low in the echelon of command; there can be miscalculations on the part of governments as to enemy intent and the meaning of ambiguous signals. Not all deterrent strategies will involve the risk of accident equally. One of the principles of selecting a strategy should be to reduce the chance of accident, wherever we can, without a corresponding increase in vulnerability to a rational surprise attack. This is the purpose of the "fail-safe" procedures for launching SAC.

These problems are also relevant to the disarmament question. The Russians, exploiting an inaccurate United Press report which suggested that SAC started en masse toward Russia in response to frequent radar "ghosts," cried out against these supposed Arctic flights. The United States response, and its sequels, stated correctly that such flights had never been undertaken except in planned exercises and would not be undertaken in response to such unreliable warning. We pointed out the importance of quick response and a high degree of readiness in the protection of the deterrent force. The nature of the fail-safe precaution was also described.

We added, however, to cap the argument, that if the Russians were really worried about surprise attack they would accept the President's "open skies" proposal. This addition, however, conceals an absurdity. Aerial photography would have its uses in a disarmament plan—for example, to check an exchange of information on the location of ground bases. However, so far as surprise is concerned, an "open skies" plan would have direct use only to discover attacks requiring much more lengthy, visible and unambiguous preparations than are likely today.[10] The very readiness of our own strategic force suggests a state of technology which outmodes the "open skies" plan as a counter to surprise attack. Not even the most advanced reconnaissance equipment can disclose an intention from 40,000 feet. Who can say what the men in the blockhouse of an I.C.B.M. base have in mind? Or, for that matter, what is the final destination of training flights or fail-safe flights starting over the Pacific or North Atlantic from staging areas?

The actions that need to be taken on our own to deter attack might usefully be complemented by bilateral agreements for inspection and reporting and, possibly, limitation of arms and of methods of operating strategic and naval air forces. But the protection of our retaliatory power remains essential; and the better the protection, the smaller the burden placed on the agreement to limit arms and modes of operation and to make them subject to inspection. Reliance on "open skies" alone to prevent surprise would invite catastrophe and the loss of power to retaliate. Such a plan is worthless for discovering a well prepared attack with I.C.B.M.s or submarine-launched missiles or a routine mass training flight whose destination could be kept ambiguous. A tremendous weight of weapons could be delivered in spite of it.

Although it is quite hopeless to look for an inspection scheme which would permit abandonment of the deterrent, this does not mean that some partial agreement on inspection and limitation might not help to reduce the chance of any sizable surprise attack. We should explore the possibilities of agreements involving limitation and inspection. But how we go about this will be conditioned by our appreciation of the problem of deterrence itself.

The critics of current policy who perceive the inadequacy of the strategy of deterrence are prominent among those urging disarmament negotiations, an end to the arms race and a reduction of tension. This is a paramount interest of some of our allies. The

balance of terror theory is the basis for some of the more light-hearted suggestions: if deterrence is automatic, strategic weapons on one side cancel those of the other, and it should be easy for both sides to give them up. So James E. King, Jr., one of the most sensible writers on the subject of limited war, suggests that weapons needed for "unlimited" war are those which both sides can most easily agree to abolish, simply because "neither side can anticipate anything but disaster" from their use. "Isn't there enough stability in the 'balance of terror,' " he asks, "to justify our believing that the Russians can be trusted—within acceptable limits—to abandon the weapons whose 'utility is confined to the threat or conduct of a war of annihilation'? "[11]

Indeed, if there were no real danger of a rational attack, then accidents and the "*n*th" country problem would be the only problems. As I have indicated, they are serious problems and some sorts of limitation and inspection agreement might diminish them. But if there is to be any prospect of realistic and useful agreement, we must reject the theory of automatic deterrence. And we must bear in mind that the more extensive a disarmament agreement is, the smaller the force that a violator would have to hide in order to achieve complete domination. Most obviously, "*the abolition* of the weapons necessary in a general or 'unlimited' war" would offer the most insuperable obstacles to an inspection plan, since the violator could gain an overwhelming advantage from the concealment of even a few weapons. The need for a deterrent, in this connection too, is ineradicable.

Summary

Almost everyone seems concerned with the need to relax tension. However, relaxation of tension, which everyone thinks is good, is not easily distinguished from relaxing one's guard, which almost everyone thinks is bad. Relaxation, like Miltown, is not an end in itself. Not all danger comes from tension. To be tense where there is danger is only rational.

What can we say then, in sum, on the balance of terror theory of automatic deterrence? It is a contribution to the rhetoric rather than the logic of war in the thermonuclear age. The notion that a carefully planned surprise attack can be checkmated almost effortlessly, that, in short, we may resume our deep pre-Sputnik sleep, is wrong and its nearly universal acceptance is terribly dangerous. Though deterrence is not enough in itself, it is vital. There are two principal points.

First, deterring general war in both the early and late 1960s will be hard at best, and hardest both for ourselves and our allies wherever we use forces based near the enemy.

Second, even if we can deter general war by a strenuous and continuing effort, this will by no means be the whole of a military, much less a foreign policy. Such a policy would not of itself remove the danger of accidental outbreak or limit the damage in case deterrence failed; nor would it be at all adequate for crises on the periphery.

A generally useful way of concluding a grim argument of this kind would be to affirm that we have the resources, intelligence and courage to make the correct decisions. That is, of course, the case. And there is a good chance that we will do so. But perhaps, as a small aid toward making such decisions more likely, we should contemplate the possibility that they may *not* be made. They *are* hard, *do* involve sacrifice, *are* affected by great uncertainties and concern matters in which much is altogether unknown and much else

must be hedged by secrecy; and, above all, they entail a new image of ourselves in a world of persistent danger. It is by no means *certain* that we shall meet the test.

Notes

 1 I want to thank C.J. Hitch, M.W. Hoag, W.W. Kaufman, A.W. Marshall, H.S. Rowen and W.W. Taylor for suggestions in preparation of this article.
 2 George F. Kennan, "A Chance to Withdraw Our Troops in Europe," *Harper's Magazine*, February 1958, p. 41.
 3 P.M.S. Blackett, "Atomic Weapons and East-West Relations" (New York: Cambridge University Press, 1956), p. 32.
 4 Joseph Alsop, "The New Balance of Power," *Encounter*, May 1958, p. 4. It should be added that, since these lines were written, Mr. Alsop's views have altered.
 5 *The New York Times*, September 6, 1958, p. 2.
 6 General Pierre M. Gallois, "A French General Analyzes Nuclear-Age Strategy," *Réalités*, Nov. 1958, p. 19; "Nuclear Aggression and National Suicide," *The Reporter*, Sept. 18, 1958, p. 23.
 7 See footnote, p. 228.
 8 See, for example, "NATO, A Critical Appraisal," by Gardner Patterson and Edgar S. Furniss, Jr., Princeton University Conference on NATO, Princeton, June 1957, p. 32: "Although no one pretended to know, the hypothesis that one-third of the striking force of the United States Strategic Air Command was in the air at all times was regarded by most as reasonable."
 9 General Gallois argues that, while alliances will offer no guarantee, "a small number of bombs and a small number of carriers suffice for a threatened power to protect itself against atomic destruction." (*Réalités, op. cit.*, p. 71.) His numerical illustrations give the defender some 400 underground launching sites (ibid., p. 22, and *The Reporter, op. cit.*, p. 25) and suggest that their elimination would require between 5,000 and 25,000 missiles—which is "more or less impossible"—and that in any case the aggressor would not survive the fallout from his own weapons. Whether these are large numbers of targets from the standpoint of the aggressor will depend on the accuracy, yield and reliability of offense weapons as well as the resistance of the defender's shelters and a number of other matters not specified in the argument. General Gallois is aware that the expectation of survival depends on distance even in the ballistic missile age and that our allies are not so fortunate in this respect. Close-in missiles have better bomb yields and accuracies. Moreover, manned aircraft—with still better yields and accuracies—can be used by an aggressor here since warning of their approach is very short. Suffice it to say that the numerical advantage General Gallois cites is greatly exaggerated. Furthermore, he exaggerates the destructiveness of the retaliatory blow against the aggressor's cities by the remnants of the defender's missile force—even assuming the aggressor would take no special measures to protect his cities. But particularly for the aggressor—who does not lack warning—a civil defense program can moderate the damage done by a poorly organized attack. Finally, the suggestion that the aggressor would not survive the fallout from his own weapons is simply in error. The rapid-decay fission products which are the major lethal problem in the locality of a surface burst are not a serious difficulty for the aggressor. The amount of the slow-decay products, strontium-90 and cesium-137, in the atmosphere would rise considerably. If nothing were done to counter it, this might, for example, increase by many times the incidence of such relatively rare diseases as bone cancer and leukemia. However, such a calamity, implying an increase of, say, 20,000 deaths per year for a nation of 200,000,000, is of an entirely different order from the catastrophe involving tens of millions of deaths, which General Gallois contemplates elsewhere. And there are measures that might reduce even this effect drastically. (See the RAND Corporation Report R-322-RC, *Report on a Study of Non-Military Defense*, July 1, 1958.)
10 Aerial reconnaissance, of course, could have an *indirect* utility here for surveying large areas to determine the number and location of observation posts needed to provide more timely warning.
11 James E. King, Jr., "Arms and Man in the Nuclear-Rocket Era," *The New Republic*, September 1, 1958.

14 Attacking the atom

Does bombing nuclear facilities affect proliferation?

Sarah E. Kreps and Matthew Fuhrmann

Introduction

What are the consequences of military strikes against nuclear facilities? In particular, do they 'work' by delaying the target state's ability to build the bomb? Policymakers in the United States, Israel, and even Arab countries such as Saudi Arabia[1] have implied an affirmative response, indicating that military force might frustrate Iran's current nuclear program. Yet, this perspective is at odds with concerns in the scholarly literature that the use of force is ineffective and should be avoided at all costs.[2] If attacks against nuclear programs significantly delay proliferation, then policymakers may be correct to keep military force in the nonproliferation toolkit. On the other hand, if strikes are ineffective tools of nonproliferation, then countries are wise to heed the cautionary advice of scholars who urge them to pursue other strategies.

This article speaks to the debate on the efficacy of military force by analyzing the historical record of attacks against nuclear programs. We identify four theoretical mechanisms for how strikes may affect nuclear weapons' production capacity. First, and most directly, attacks can delay the target's ability to build nuclear weapons by destroying chokepoint facilities that are critical for bomb development. Strikes may also delay the target's program through three indirect mechanisms. Raids could produce a change in the target's fissile material production strategy, make foreign suppliers less willing to provide nuclear assistance, and lead to enhanced international inspections. These outcomes can be thought of as externalities of strikes because they are unrelated to the original aims of the attacker but can nevertheless frustrate the target's ability to proliferate.

To assess these mechanisms, we conduct a comprehensive analysis of all 16 attacks against nuclear programs that have occurred from 1942 to 2007.[3] We analyze strikes that occurred during peacetime as well as those that took place in the context of an ongoing interstate war. 'Bolt from the blue' attacks are qualitatively different from strikes against nuclear facilities during wartime, but both types of cases are useful in understanding this issue.[4] Peacetime cases, such as Israel's 1981 attack against Iraq and its 2007 strike against Syria, are ideal for evaluating both the direct and indirect mechanisms because we can isolate the effects of limited raids from the broader effects of interstate conflict. This is more difficult for wartime cases, including World War II, the Iran–Iraq War, and the 1990–91 Persian Gulf War. For example, the post-Persian Gulf

War inspections regime influenced Iraq's ability to reconstitute its weapons program in the 1990s, but it is hard to know whether strikes against nuclear infrastructure during the campaign contributed to this outcome independent of Iraq's military defeat. We therefore study wartime cases to evaluate the direct mechanism, that is, whether the strike removed past progress by destroying relevant nuclear facilities.

As we show, the use of force did not significantly delay the target's nuclear weapons program in many of the wartime cases. Strikes failed in large part because there was limited intelligence on the location of targets. Further, targets were not always effectively destroyed even when their location was known. On the other hand, the peacetime attacks tended to delay the target's nuclear program, providing some support for both direct and indirect mechanisms. The size of this effect was rather modest, however, since neither Iraq nor Syria was on the verge of building nuclear weapons at the time of the raid.

Our findings challenge both sides of the debate on whether force works and suggest that neither perspective is as clear cut as its proponents would have us believe. The view that strikes 'are generally ineffective, costly, unnecessary, and potentially even counterproductive'[5] downplays evidence of prior strikes that delayed the target state's nuclear program. The competing view that strikes might be a panacea for international proliferation does not take into account the number of instances in which attackers failed to destroy key nuclear facilities in the target country. We offer a more nuanced picture; we show that there have been instances of both success and failure and explain why there is variation.

While we conclude that some cases bought time for the attacker, this finding should be seen in a qualified light when it comes to predicting the consequences of future events. In his study of why countries build nuclear weapons, Scott Sagan aptly pointed out that 'predicting the future based on such an understanding of the past . . . [is] problematic, since the conditions that produced the past proliferation outcomes may themselves be subject to change.'[6] As we show in the discussion of this paper, the same is likely true for attacks on nuclear facilities. This has important implications for contemporary debates on how to respond to Iran and other proliferators.

This article proceeds in four parts. First, we outline four mechanisms by which the use of military force could affect the target state's nuclear program. Second, we evaluate all four theoretical mechanisms by analyzing the two Israeli peacetime raids. Third, we analyze the direct mechanism by considering strikes undertaken in the context of interstate war. The final section discusses the findings, assesses the conditions under which strikes might be useful in delaying a proliferator's nuclear program, and evaluates the likely effects of strikes against Iranian nuclear facilities.

How could attacks affect proliferators' weapons programs?

We begin with the straightforward observation that the acquisition of nuclear weapons requires both political willingness and technical capacity. Security threats or being insulated from the global economy often motivate states to pursue the bomb.[7] Yet states cannot cross the nuclear threshold without the requisite nuclear technology, materials, and knowledge. A growing number of quantitative studies show that supply-side considerations, particularly whether a country has the requisite nuclear infrastructure, are

salient in explaining who acquires nuclear weapons.[8] This indicates that political will is not a sufficient condition for going nuclear – even if a country is determined to get the bomb. The historical record supports this assertion. Although 22 countries have had nuclear weapons programs since 1942, only 10 have successfully produced the bomb.[9] Iran, for instance, began a nuclear weapons program in the 1980s but it has not yet acquired the bomb in part because of technical challenges.

The most significant and technically difficult factor affecting a state's opportunity to develop nuclear weapons is its ability to produce adequate quantities of fissile material. There are two paths countries can take to acquire fissile nuclear material. One involves enrichment technology designed to produce highly enriched uranium (HEU). A second path toward fissile material production involves reactor-based technology oriented toward plutonium production.[10] This means that key chokepoints in a nuclear weapons program are: (1) uranium enrichment facilities; (2) plutonium reprocessing facilities; and (3) reactors.[11]

Attacks can delay a target state's ability to produce nuclear weapons if they make it more difficult for it to possess these chokepoint facilities and, in turn, produce fissile material. Below, we identify four possible mechanisms that might produce this outcome. The first affects the target's past progress; the others limit its future potential to produce fissile material.

The direct effects of attacks against nuclear facilities

The most direct way that an attack can affect the target state's nuclear program is through the destruction of facilities crucial to weapons development. An attack could delay the target's nuclear ambitions if any of the chokepoint facilities we identify above were destroyed. The magnitude of this effect depends on how many of the target's chokepoint facilities are destroyed relative to those continuing to operate. If the target possesses numerous chokepoint facilities and the attack destroys all of them, the raid would have a comparatively large effect on the nuclear program. A raid would have a more modest impact if some chokepoint facilities are razed but others are left intact.

It is difficult to determine exactly how many years an attack could set back a program in the event that chokepoint facilities are destroyed. Such a calculation would depend on the types of facilities countries possessed, how much progress they had made toward building the bomb, and their level of indigenous knowledge. If a country does not possess any chokepoint facilities prior to an attack, it would be hard to classify a strike as 'effective' from a counterproliferation standpoint even if it razed nuclear infrastructure. In the absence of chokepoint facilities, the target would not have been able to produce fissile material at any point in the near future in the absence of a strike. On the other hand, if a country possesses numerous chokepoint facilities and the attack destroys all of them, the raid has a comparatively large effect on the nuclear program since the target would likely otherwise have been able to produce fissile material for a bomb in the near future.[12] In a best case scenario where a strike razed all chokepoint facilities a target country possessed, it could set the program back five to ten years, if we assume that the target country possessed chokepoint facilities that were near completion and continued its pursuit of the bomb at a rate similar to what it did prior

to the attack. This estimate is lower than the amount of time it generally takes to construct chokepoint facilities[13] because diminishing marginal costs enable countries to build a second facility quicker. For example, it took India more than a decade to develop its first uranium enrichment facility but it built the second such plant in only five years.[14]

Conversely, attempts to hit chokepoints can fail. An obvious cause of a failed strike would be poor intelligence.[15] In other cases the attempt could end in operational failure due to an accident or the attackers coming under enemy fire. In the event that the attacker cannot locate or destroy targets, attacks would obviously not delay the target's nuclear program and could actually accelerate it by increasing the state's willingness to build nuclear weapons. Failed attacks could also lead to measures that make future strikes more difficult, for example by distributing the chokepoints so that they cannot be hit in one strike.

The indirect effects of attacks against nuclear facilities

The mechanism we described above is based on the notion that an attack can directly delay a nuclear program by reversing past progress. An attack could also impact a target's program more indirectly by affecting its future behavior in one of three ways.

Shift in the approach to fissile material production.   A raid might alter a target state's priorities such that it values keeping its program covert above all else. This, in turn, could cause a target country to alter its approach to acquiring fissile material. The most likely such shift is from plutonium production to uranium enrichment. Proliferators pursuing the plutonium route may choose to focus on the uranium path following an attack because it is comparatively more difficult to conceal reactors and reprocessing facilities due to their sheer size. Target states might also perceive that some enrichment plants may be more difficult to keep covert than others. For instance, electromagnetic isotope separation (EMIS) facilities might arouse less suspicion because the technologies involved are less tightly controlled. Consequently, they might abandon plans to develop centrifuge or gaseous diffusion plants after an attack in favor of an EMIS plant that relies on less conspicuous technology.

While a target state may correctly perceive that changing its approach to acquiring fissile material provides greater secrecy, this shift can also delay its nuclear program if it chooses to pursue a technology with which it has little experience.[16] Under such circumstances, the target would need to develop indigenous knowledge and procure or develop new technologies. This would take comparatively more time because it would not benefit from the favorable effects of learning. For example, rebuilding a reactor might take less than three years but building a centrifuge enrichment facility without having previously done so could take at least 14 years.[17] Moreover, there is no guarantee that the target could successfully develop this facility. Of the 18 countries that have attempted to enrich uranium using the centrifuge method since the 1940s, only seven (39%) have successfully done so.[18] This indicates that a program could be delayed even further if the target chose to pursue a technology that was easier to conceal but inefficient or difficult to master.

Reduction in willingness of foreign suppliers to provide assistance.   The use of force is typically an instrument of last resort because it is potentially risky and expensive. Military force, therefore, represents a costly signal that the attacking country is committed to ending or delaying the target's nuclear program. This might make third parties less inclined to supply nuclear technology, materials, or know-how to the suspected proliferating state for two reasons. First, there are practical risks associated with constructing facilities that could be targeted. To build a nuclear facility such as a reactor, personnel from the supplier country would have to spend years on the ground in the recipient country.[19] Many of these personnel could be killed if the facility they were constructing was attacked again. The prospect of military force against the same program might discourage states from engaging in the perilous business of nuclear supply.

Second, the use of force reveals information about the proliferating state. It signals that at least one state (i.e., the attacker) had reason to believe that the target was using, or planning to use, nuclear infrastructure not to develop energy, but to develop the bomb. In exposing these dangers, attacks affect the way that third parties – especially nuclear supplier countries – view the target's development of nuclear facilities. Helping a country acquire the bomb could increase the risk of nuclear war, instigate regional instability, raise the possibility of nonstate actors getting their hands on nuclear weapons, and reduce the supplier's ability to exert influence against the target state.[20] Supplying to a suspected proliferating state could also damage the supplier's relations with the attacking state and other powerful states that champion nonproliferation. Each of these outcomes would harm the supplier's interests and create incentives to discontinue its nuclear commerce.

An inability to obtain foreign assistance would have serious consequences because of its contribution to a target state's nuclear program. Foreign assistance is typically supplied exclusively for peaceful purposes, but dual-use technology can also be used to build nuclear weapons.[21] Additionally, nuclear assistance helps establish an indigenous infrastructure that can be drawn on to build facilities dedicated to a military program. For these reasons, nuclear aid lowers important barriers to proliferation, whereas the withdrawal of such assistance would increase the time necessary to develop a nuclear weapon.

Enhanced international inspections and safeguards.   The nuclear Nonproliferation Treaty (NPT), which entered into force in 1970, entitles all non-nuclear-weapon states to nuclear technology for peaceful purposes on the condition that they accept a system of safeguards imposed by the International Atomic Energy Agency (IAEA). This safeguards system – and the nuclear nonproliferation regime more generally – is based on the notion that countries can have a peaceful nuclear infrastructure that does not contribute to a weapons program if certain technical and legal restraints are imposed. Although IAEA safeguards do not guarantee that a proliferator will not use nuclear technology for military purposes, rigorous inspections can make such diversions more difficult. It was IAEA inspections that detected irregularities in North Korea in 1992, for instance.[22] Inspections, though not flawless, can help clarify the intentions of a nuclear program and add a level of scrutiny that may make it more difficult for a state to produce fissile material for bombs.

The use of force is not the only way to trigger enhanced international inspections, but there are two reasons to expect that it could lead to that outcome. First, the IAEA, with support from member countries, is likely to seek a greater presence in a country that has been attacked to counter the perception that it is incapable of fulfilling its mandate and to decrease the likelihood that additional attacks will occur. Second, the targeted country might encourage the IAEA's presence in order to demonstrate to the international community that its intentions are peaceful.

Peacetime case studies

Israeli attacks against Iraq's nuclear program, 1981

Beginning in the 1970s, Israel pursued a series of covert and later overt actions designed to delay the Iraqi nuclear program.[23] The Iran–Iraq war provided an opportunity for it to escalate its opposition to Baghdad's bomb campaign. Using eight Israeli F-16s flanked by eight F-15s for cover, the Israeli Air Force raided the Osirak facility in 1981. The Israeli strikes completely destroyed the reactor and caused minimal collateral damage.[24]

Previous research has debated the effect of the 1981 strike on the Iraqi nuclear program. According to one view, the attack did little to affect the program because Osirak – a 70 MW light water reactor – was not ideal for plutonium production. Skeptics of its ability to generate plutonium for bombs point to a Congressional Research Service report indicating that it would have taken 10–30 years to produce enough plutonium for a bomb.[25] Those advocating this position also suggest that French suppliers would have been 'highly motivated to report any illegal weapons activity' in the event that Iraq attempted to use a civilian facility to produce plutonium for bombs.[26] At the other end of the spectrum is the view that 'the Israeli counterproliferation effort successfully prevented Iraq from building a nuclear weapon,' destroying the most critical Iraqi nuclear facility and making it impossible for Iraq to produce more than six grams of plutonium by 1991.[27] Somewhere in between is the argument that the use of military force set back the Iraqi program at least several years; in 1981, French nuclear engineers estimated that it would take four and a half years to rebuild the facility.[28]

We find evidence supporting the view that the raid both directly and indirectly delayed the Iraqi nuclear program. A report from French scientists familiar with the project estimated that the reactor could produce between three and ten pounds of plutonium annually, at about seven pounds per bomb; 'the risk is self-evident,' reported one of the scientists involved with the report.[29] Jeremy Tamsett argues that Osirak could have produced plutonium for 28 nuclear weapons by the end of the decade.[30] Yet another estimate suggested a production of about 8–10 kg of plutonium annually, enough for about one bomb a year.[31]

Moreover, the argument that Iraq could not have used Osirak for military purposes rests on some questionable assumptions. For example, the view that France would be motivated to report illegal weapons activity and therefore that Iraq would have been unable to produce enough plutonium is unconvincing. This assumes that France, and

the international community more generally, would be aware of illicit activities in the event that they occurred. It is not clear that this would have been the case, however. Although Osirak was under IAEA safeguards, Iraq had devised crafty ways of misleading inspectors that verified compliance with the NPT.[32] Inspectors did not have a permanent presence in Iraq, making it possible for Baghdad to elude detection. A final problem with this argument is that France was hardly the poster child for nonproliferation during this era. Paris knowingly helped Israel build nuclear weapons and refused to ratify the NPT until the 1990s. It is by no means obvious that it would have been sufficiently motivated to take action against Iraq in the name of nonproliferation. Thus, by destroying a facility suited to plutonium production, Israel removed Iraq's past nuclear progress, supporting the direct mechanism outlined above.

There is also evidence in favor of two of the indirect mechanisms specified. The attacks provoked a shift in Iraq's path toward the bomb. Iraq had considered uranium enrichment before the attacks, but accelerated those plans after the attacks, both because France did not rebuild the reactor, but also because the plutonium path would have been an easier target for subsequent attacks. Iraq did not completely abandon its plutonium program, but focused the majority of its efforts on the uranium path, with EMIS and to a far lesser extent gaseous diffusion emerging as the top candidates.[33]

The problem with shifting courses is that Iraq lacked indigenous knowledge necessary to master the complexities of enrichment technology. The EMIS program faced technical challenges that limited its ability to produce sufficient enriched uranium for a bomb.[34] In part because of these challenges, Iraq began working on gas centrifuge technology. The centrifuge program required a sophisticated, foreign technology with which Iraqis were not familiar; they encountered many problems because of complexities of rotor dynamics that the Iraqi scientists did not understand. As one Tuwaitha engineer suggested, 'a centrifuge is like a delicate soufflé that will fall apart if anything is done incorrectly, and our chefs were woefully unprepared.'[35]

The attack did provoke Saddam Hussein to intensify his support for the Iraqi program, adding additional scientists, increasing financial investment in the effort to produce the bomb.[36] Increased resources were not sufficient for an accelerated nuclear program, however, since the strikes led to insurmountable technical impediments. On the contrary, the attempt to fast-track the bomb was counterproductive, as the Iraqi scientists 'tried to shortcut the difficult science of rotor dynamics' and burned out the centrifuges, with one scientist concluding that 'a little knowledge is dangerous indeed.'[37] Thus, despite Saddam attributing 'a high value to the nuclear progress and talent that had been developed to the 1991 war,' technical challenges prevented him from acquiring sufficient quantities of fissile material by the time of the 1991 Persian Gulf War.[38]

The Israeli raid also made France – Iraq's most important nuclear supplier – less likely to assist the program. France appears to have considered rebuilding the reactor or resupplying Iraq with nuclear fuel that posed less of a proliferation risk.[39] One French official, however, suggested that declarations about French willingness to assist Iraq in resuscitating its program were ' "living-room hypotheses" designed to save face for the Iraqis' and that the reactor would never be rebuilt.[40] In any case, years passed and neither Mitterrand nor Chirac – despite allegations that the latter had confidentially

promised Saddam that he would rebuild the facility – ever followed through.[41] Mahdi Obeidi, a high-ranking Iraqi nuclear scientist, regretted that 'months passed, and the promised French cooperation never materialized. For those of us who had once envisioned an Iraqi nuclear program . . . the dream died on the vine.'[42] Iraq signed bilateral civilian nuclear cooperation agreements with many countries including Brazil, France, Italy, and the Soviet Union prior to 1981 but it had incredible difficulty securing atomic assistance after the Israeli strike.[43]

There are no indications that the strike delayed Iraq's nuclear program by producing enhanced international inspections. IAEA officials certainly opposed the raid, as they viewed it as an indictment of the safeguards regime.[44] Inspectors did not necessarily have greater access to Iraqi officials following the strike, however.

Israeli attack against Syria's nuclear program, 2007

Israel's September 2007 strike on a nuclear facility in Syria was undertaken under a shroud of secrecy. The attack destroyed a Syrian reactor at Al Kibar that was in the early phases of development, likely with assistance from North Korea.[45] Unlike the attention and censure surrounding the 1981 Osirak strike, the international reaction was comparatively silent and weeks passed before Israeli officials acknowledged that it occurred.[46] A US intelligence briefing in April 2008 confirmed suspicions that the facility had been a nuclear reactor camouflaged in order to minimize attention, but nonetheless had been 'irreparably damaged' by the September 2007 Israeli raid.[47]

The Israeli strike destroyed a facility similar to the North Korean reactor at Yongbyon, which is well suited to plutonium production. Operating at full power, the Syrian reactor could have produced about one weapon's worth of plutonium annually.[48] Without a reprocessing facility, which has not been located, Syria would have been unable to extract plutonium from spent nuclear fuel, however. Moreover, while the reactor was nearing operational capacity at the time of the attack, full-scale operations would have been impossible in the absence of fuel to operate the reactor; such fuel was missing and would have 'required weeks or months of testing once inside the reactor.'[49] By destroying the physical plant, however, Israel negated about six years of progress toward nuclear development, the average time states have taken to build a gas-cooled graphite-moderated reactor.[50]

In addition to the attack having the direct effect in terms of removing past progress, there is also evidence supporting two of the indirect theoretical mechanisms. The Israeli raid complicated Syria's efforts by triggering international investigations. Prior to the Al Kibar attack, Syria's program was largely unidentified and thus uninspected. After the strikes, the IAEA solicited information on Syria's program from NPT member states. Several months later, the United States responded with a detailed display of satellite images and other previously classified evidence documenting the development of Syria's nuclear reactor over a period of years.[51]

The IAEA took several other steps. It demanded a visit to inspect Syria's suspected nuclear site. According to Mohamed ElBaradei, Syria had 'an obligation to report the planning and construction of any nuclear facility to the agency . . . we are treating this information with the seriousness it deserves.'[52] In May 2008, the IAEA stated

its commitment to its safeguards responsibilities and informed Syria of its intentions to send inspectors to review information and inspect the site at Al Kibar. Syria responded with a letter that same month agreeing to the visit. According to the IAEA, Syria 'provided unrestricted access to all of the buildings on the site' during the June 2008 visit.[53] On-site inspections and imagery allowed the IAEA to conclude that the facility was 'similar to what may be found in connection with a reactor site.'[54] Additional inspections produced evidence of uranium particles from a second site, leading to questions about why 'material that was not previously declared to the IAEA was detected at two facilities in Syria, one of which was being constructed clandestinely.'[55] The results were sufficiently suspicious to land Syria on the IAEA's official meeting agenda and to keep the pressure on Syria after the attacks. As one IAEA diplomat anonymously indicated, 'the agency clearly thinks it has something significant enough to report to put Syria on the [nuclear safeguards] agenda right after North Korea and Iran.'[56] Prior to the inspection and investigation, information on Syria's nuclear program had been 'inconclusive' and Syria had remained off the official IAEA meeting agenda.[57] Syria has not been forthcoming in answering questions uncovered during inspections, but the additional intelligence from member states, the first independent investigation of the reactor in June 2008, and placement on the IAEA's meeting agenda all indicate that the IAEA is far more involved in scrutinizing Syria's program following the raid.

It is difficult to obtain comprehensive information on North Korea's post-attack intentions, but the raid appears to have made it less tenable for Pyongyang to assist Syria's nuclear program. Since Syria's indigenous capabilities are insufficient to build sophisticated nuclear facilities at this point in time, the withdrawal of North Korean assistance has frustrated the progress of its nuclear program.

Wartime case studies

Allied attacks against Germany's nuclear program, 1942–1945

Between 1942 and 1944, the allies waged four separate attacks on the Norsk-Hydro heavy water facility in German-occupied Norway. In October 1942, a 34-person British sabotage team in two Horsa gliders crashed as it attempted to destroy stockpiles of heavy water at the facility.[58] This raid was a dismal operational failure and actually prompted Germany to defend the facility more heavily, mining all access points. In February 1943, skiers from the Royal Norwegian Army dressed in British uniforms parachuted into Rjukan, the site of the heavy water facility, and destroyed the heavy water.[59] This act of sabotage destroyed 18 electrolysis cells in the heavy water facility's chambers, flushed 500 kg of heavy water, and took the facility out of commission for about two months.

In November 1943 the allies followed-up by attacking the facility by air. Two hundred American B-17s dropped over seven hundred 1000-pound bombs on the plant.[60] Many of these bombs missed or inflicted only light damage on their targets, but 12 bombs successfully damaged the facility. These airstrikes dispensed of more heavy water and shut down the facility for months.[61] Reports suggested that this attack was one 'of the

most important and successful undertakings the Allied saboteurs have carried out as yet during the war.'[62]

Germany was able to rebuild the facility quicker than the allies had anticipated but facing the prospect of additional attacks, the Germans decided to transfer materials involved in the production of heavy water to the continent in 1944.[63] A Norwegian saboteur who had been tipped off by British intelligence intercepted the ferry Hydro that was transporting heavy water and sank it into the bottom of Lake Tinnsjo in Norway.[64] This attack sank another 607 kg of heavy water and reinforced the perils of maintaining a nuclear facility in occupied territory.[65]

Iraqi attacks against Iran's nuclear program, 1984–1988

The Iran–Iraq War provided the backdrop for a series of strikes against nuclear facilities. In 1980, Iranian F-4 Phantoms attacked Iraq's Osiraq plant en route home from a bombing raid. This strike was an operational failure and it caused little damage to Osirak, necessitating the Israeli raid one year later.[66]

Later in the war, Iraq raided Iran's Bushehr reactors in a series of attacks. The first strike took place in March 1984, and was followed by subsequent attacks in each year of the war until a final raid in 1988, a total of seven strikes over five years.[67] Iraq's initial airstrikes did minimal damage to the reactors.[68] It was not until November 1987 that Iraqi airstrikes actually caused significant damage.[69] According to a German witness involved in the Iranian nuclear project, the 1987 raids were 'very accurate' and 'destroyed the entire core area of both units' and subsequently exposed them to a hostile climate of salt and extreme temperatures.[70] IAEA assessments found that the reactor was 'certainly not completely destroyed' though considerable damage had been done.[71]

Iraqi raids ultimately reversed a substantial amount of progress on the Bushehr projects. The German contractor Kraftwerk Union began constructing the facilities in 1974 and at the time of the first attack in 1984, the two reactors at Bushehr were 90 per cent and 50 per cent complete, respectively.[72] The Iraqi strikes – especially the 1987 attacks – necessitated nearly a complete reconstruction of the facilities. Yet, Iraq needed to strike repeatedly over a period of four years in order to achieve this result.

US attacks against Iraq's nuclear program, 1991, 1993

Nuclear facilities were among the high priority targets during the 1990–91 Persian Gulf War.[73] In the initial stages of the war, coalition aircraft struck the Tuwaitha Research Facility near Baghdad and F-117s repeatedly bombed this plant throughout the campaign. The United States also struck a suspected uranium feedstock production facility near Mosul and a uranium extraction facility at Al Qaim. These attacks were mixed in terms of their damage to Iraq's nuclear infrastructure. In 1991, the key chokepoints relevant to Iraq's weapons program were the facilities related to the EMIS and gas centrifuge enrichment programs. The bombing raids destroyed several of the chokepoint facilities, especially those relevant to Iraq's EMIS enrichment program. As the Iraq Survey Group (ISG), also referred to as the Duelfer Report, concluded in the aftermath of the 2003 Iraq War: 'Nearly all of the key nuclear facilities

. . . were bombed during Desert Storm . . . Many of the facilities located at Tuwaitha were devastated, and the EMIS enrichment plants at Tarmiya and Ash Sharqat were largely destroyed.'[74]

Other key facilities were not destroyed, however, because the United States was unaware of their existence or their location. The yellowcake facility at Al-Qa'im, feed material plant at Mozul, and high explosives testing site (Al-Athir) were damaged, but the centrifuge facility at Rashdiya was 'neither found nor targeted in the 1991 war.'[75] The Gulf War Air Power Survey underscored the challenges associated with locating and targeting Iraqi nuclear facilities during the war. It stated, 'we now know that the Iraqis' program to amass enough enriched uranium to begin producing atomic bombs was more extensive, more redundant, further along, and considerably less vulnerable to air attack than was realized at the outset of Desert Storm.'[76] As inspections discovered soon after the Gulf War, Iraq had three times more nuclear facilities than military planners believed during the war.[77] The case of Ash Sharqat is representative of the coalition's targeting challenges. It was thought to be a rocket facility rather than one related to Iraq's nuclear program; the facility was the subject of a series of attacks and then dismissed, 'because intelligence did not suspect Ash Sharqat of nuclear activities.'[78]

In the aftermath of the Gulf War, the United States again struck suspected nuclear facilities. On January 17, 1993, the US Navy used Tomahawk Land Attack Missiles against facilities that had largely escaped unscathed from the Gulf War: Facility 409 (Ma'malal'Rabia') that manufactured calutrons for the Iraqi EMIS program and Facility 416 (Al-Dijla) that produced power supplies for the EMIS project. These attacks were reasonably successful at the operational level. UNSCOM and IAEA teams found that the Navy Tomahawk Land Attack Missiles had successfully hit the buildings and destroyed sensitive machine tools in the 1993 raid and could be considered an operational success.[79]

Discussion and conclusion

The standard debate on whether military force delays proliferation is typically cast in stark terms. One side of the debate suggests that attacks offer the prospect of unequivocal success in delaying nuclear proliferation; the other counters that the use of force can actually backfire by accelerating the target state's nuclear programs. History tells a more complicated story. In this section we discuss the conclusions that emerge from our analysis and comment on what the historical record says about the likely effect of an attack against Iran's nuclear program.

We theorized that strikes could delay progress through both direct and indirect mechanisms. Peacetime cases produced some support for the general argument that attacks delay states' acquisition of fissile material and for the specific mechanisms, but the size of this effect was generally modest.

The 1981 Osiraq raid offered support for three of the four mechanisms outlined. First, the Israeli attack destroyed a key chokepoint for Iraq's nuclear program (although the Israelis left the reprocessing facility intact), evidence supporting the direct mechanism. Second, the attack had an indirect effect by prompting Iraq to switch from re-processing technology to centrifuge technology, which it hoped would be more easily

concealed. Centrifuge enrichment proved technically challenging and ineffective for the Iraqis who knew little about the technology. Third, compounding matters further, France withdrew its support from the program after the strike. In the absence of indigenous know-how or materials, Iraq found uranium enrichment to be laborious and time-consuming since its scientists did not understand rotor dynamics and spent years either burning up the centrifuges or trying to make do with poor quality centrifuges.

Israel's raid on Syria in September 2007 likewise delayed Damascus' ability to build nuclear weapons both through the direct mechanism of removing past progress and through two of the indirect mechanisms. The Israeli raid destroyed a graphite-moderated reactor modeled after the North Korean facility at Yongbyon. This facility is a chokepoint because it could have been used to produce plutonium for nuclear weapons. That said, Syria does not appear to have been close to acquiring the bomb at the time of the raid. Future progress toward the bomb, however, has been made more difficult because the attack prompted IAEA attention and inspections to a program that had previously been unidentified and uninspected. Moreover, there is no evidence that Pyongyang has agreed to rebuild the reactor at Al Kibar.

Paradoxically, these two raids produced delays in part because the Iraqi and Syrian nuclear programs were in their relative infancy. In neither instance did the target state possess the means to produce fissile material for nuclear bombs at the time of the attack. Indeed, the Israelis struck before the Osirak and Al Kibar reactors had gone critical. But Baghdad and Damascus had critical chokepoints that were concentrated in a single area, making it easier for the Israelis to delay progress with one attack. Thus, it appears that attacking countries can achieve the most success before a program becomes 'a train without brakes,' to borrow a phrase from Iranian President Mahmoud Ahmadinejad. Yet, the timeframe in which strikes might be most effective is also when they would be considered the least legitimate. Anything other than preemptive uses of force (i.e., striking to prevent an imminent attack) are considered illegal under international law and the international community might be less likely to endorse attacks when it is not obvious that the target was on the verge of acquiring nuclear weapons.[80]

The wartime cases underscore the reasons why using military force to delay proliferation can encounter challenges. The dual-use nature of nuclear complexes and the relative inconspicuousness of centrifuge facilities make it possible for states to maintain a covert military nuclear program.[81] As a result, states seeking to minimize proliferation might lack timely or clear indicators on the status or whereabouts of a proliferating state's nuclear facilities. The 1991 Persian Gulf War case illustrates this problem. Many key chokepoint facilities, particularly those relating to Iraq's gas centrifuge program, were not destroyed during US airstrikes because their locations were unknown. Importantly, this problem is not limited to the wartime cases. The 1981 Osirak strike is also suggestive of an intelligence gap because the reprocessing facility next to the reactor was not targeted. Either the Israelis thought the reprocessing facility was located beneath the reactor, or they were unaware that this chokepoint existed at all. Regardless, while the Israelis successfully destroyed the Osirak reactor, they altogether neglected the adjacent plutonium reprocessing facility.

What does the historical record suggest about the consequences of a potential American or Israeli strike against Iran's nuclear program? Although military force

delayed proliferation in some previous cases, policymakers must remember that past may not be prologue. In particular, the three indirect mechanisms we identified are unlikely to 'work' in the Iranian case. Tehran received helpful nuclear assistance in the past, but it does not depend on external support today to sustain its military program. It currently receives civilian nuclear assistance from Russia but it is unclear that the withdrawal of this aid would have a major impact on its ability to produce fissile material for nuclear weapons. It is also unlikely that an attack would lead to a change in Iran's fissile material production strategy. Tehran is already relying primarily on centrifuge enrichment technology which is easier to conceal than facilities necessary for plutonium production (e.g., reactors and reprocessing centers). Centrifuges are likewise easier to hide than other enrichment technologies, such as gaseous diffusion plants. The third indirect mechanism could have a modest effect in delaying Iran's nuclear program. Inspectors from the IAEA have been on the ground in Iran for decades, but they have had only limited success in detecting transgressions in a timely fashion. If an attack caused Iran to enter the Additional Protocol (AP), which provides the IAEA the authority to visit any facility in a country, this could frustrate weaponization efforts. Potential attackers should not count on this outcome given that Syria granted the IAEA some additional access after being attacked but has still not committed to the AP.

This suggests that the direct, physical destruction of Iranian nuclear facilities would be the main route by which an attack could delay progress.[82] The most critical facilities for Iran's nuclear program are (1) the uranium enrichment plants at Natanz and Qom, (2) the Arak heavy water production center, and (3) the Isfahan uranium conversion facility. Of these facilities, the most sensitive are the enrichment plants because they could provide a critical source of fissile material for nuclear weapons (i.e., HEU). The plants at Arak and Isfahan are significant but they are alone insufficient to provide Iran with bombgrade materials. How much time could Israel or the United States buy by destroying the two uranium enrichment facilities? The history of nuclear programs reveals that it takes an average of 14 years to go from the initiation of a gas centrifuge program to the completion of the first full-scale facility.[83] Iran is already well behind the average time since it initiated its program in 1987 and it did not demonstrate operational capacity until 2004. It would not take 17 years to demonstrate operational capacity as it did before, since Iran has acquired a significant amount of indigenous knowledge that cannot realistically be taken away in an attack. But in all likelihood, a raid would still delay the program. Considering that it took India five years to construct a second centrifuge enrichment facility once it completed a pilot plant, we could assume that destroying Natanz and other related enrichment facilities could delay Iran's ability to produce fissile material by about the same amount of time. This is a relatively modest gain in light of the well-known risks associated with striking Iran's nuclear facilities.[84] Yet, policymakers who adopt short time horizons may calculate that a delay of up to five years would justify the dangers of preventive military strikes.

Either way, it is critical to recognize that this assessment rests on two fairly ambitious assumptions. The first is that all of Iran's sensitive nuclear facilities are known to Israel and/or the United States. History provides good reason to doubt that this is true. For the last several years the IAEA has been 'unable effectively to monitor the R&D activities being carried out by Iran,' except at sites with safeguarded materials, meaning that

the agency cannot address concerns about the existence of covert facilities.[85] Revelations of the second enrichment plant at Qom – also known as the Fordow Fuel Enrichment Plant – did not emerge until September 2009. It is unclear when Western intelligence agencies discovered this facility, but construction likely began in 2002.[86] The facility is located in an underground tunnel complex at a site controlled by the Islamic Revolutionary Guards Corps. Given that Iran managed to keep this facility secret for seven years, it is not implausible that there are other covert facilities that remain unknown even to intelligence services. Our analysis of the wartime cases further underscores this point. The United States was unaware of many critical nuclear facilities in Iraq prior to the 1990–91 Persian Gulf War, for example.

The second assumption deals with the operational feasibility of an attack, a question that has received excellent scholarly treatment elsewhere.[87] Although the affordability and ubiquity of precision weapons available means that targeting states are likely to hit known targets,[88] a factor that offsets improvements in military technology is that potential targets have learned from previous attacks and taken appropriate defensive measures. Just as Germany learned that it needed to better defend the Norsk-Hydro facility following the first Allied attack, Iran has learned from the Osirak and Al Kibar strikes that it should not concentrate its nuclear facilities in one location. Doing so makes it vulnerable to the possibility of a one-strike success, whereas disseminating the facilities makes each one less vulnerable. From a probabilistic standpoint, the more targets that attackers have to hit, the lower the likelihood of net success.

In sum, given that Iran already possesses the requisite knowledge to enrich uranium – and this knowledge cannot be taken away – the best possible outcome of military force would be delaying Tehran's ability to build nuclear weapons by around five years. Based on our survey of the historical record, it is far from obvious that military force would yield even this modest return. Policymakers should also be aware that multiple attacks against Iran might be necessary. We now know that Iraq terminated its nuclear weapons program in the 1990s, but this happened only after three different countries (Iran, Israel, and the United States) had attacked its facilities.

With this cautious conclusion in mind, we propose a few next steps for research. One step is to undertake a systematic study of potential costs – diplomatic, economic, or military – of using force. This analysis bracketed the question of costs, since if military force does not delay the target state's nuclear program, then the strategy has nothing to recommend it, even if the costs are negligible. However, the effectiveness question is just one side of the ledger and the overall utility of force is best assessed by taking into account the possible costs to the attacking state. For example, if the target state has the ability to launch counter strikes, the costs from attacking nuclear facilities might outweigh the benefits and justifiably deter the attacking state from using force. Indeed, the fear of high costs in part explains why the United States refrained from attacking China in the 1960s and North Korea in the 1990s[89] and may be one reason for caution even if removing the Iranian facilities through force is operationally feasible.

Having identified the reasons why striking nuclear programs can hinder the target state's proliferation goals, we also suggest analyzing whether tools other than force can provoke the same mechanisms we discuss here. We also urge future research into why countries choose force to oppose proliferation, since we have confined our focus to the

consequences, not causes of attacks. If raids delay proliferation and most countries highlight the spread of nuclear weapons as the greatest threat to their national security, why have strikes occurred relatively infrequently? At what point – whether relative to the target state's nuclear program or to the instruments that have been tried – do states resort to force? What explains the 'near misses,' the cases where states considered force but decided against it? How do the perceived high costs of attacking, normative constraints, or other factors affect the calculus on using force? Based on the gravity of proliferation and military force, we conclude that these are all important avenues for future study.

Acknowledgments

Notes

1 Ian Black and Simon Tisdall, 'Saudi Arabia Urges US Attack on Iran to Stop Nuclear Programme,' *The Guardian*, 28 Nov. 2010.

2 See, for example, Dan Reiter, 'Preventive Attacks against Nuclear Programs and the "Success" at Osiraq,' *Nonproliferation Review*, 12 (July 2005), 355–371; Dan Reiter, 'Preventive Attacks against Nuclear, Biological, and Chemical Weapons Programs: The Track Record,' in William Walton Keller and Gordon R. Mitchell (eds), *Hitting First, Preventive Force in US Security Strategy* (Pittsburgh, PA: Pittsburgh UP 2006); Richard K. Betts, 'The Osirak Fallacy,' *The National Interest* 83 (2006), 22–5; Bennett Ramberg, 'Preemption Paradox,' *Bulletin of Atomic Scientists*, Jul./Aug. 2006, 48–56.

3 We define attacks against nuclear programs as the state-sanctioned use of force against facilities related to a nuclear weapons program that has the intention of delaying a country's acquisition of nuclear bombs. For further details, see Matthew Fuhrmann and Sarah E. Kreps, 'Targeting Nuclear Programs in War and Peace: A Quantitative Empirical Analysis, 1941–2000,' *Journal of Conflict Resolution* 54/6 (2010), 831–59.

4 As Reiter notes, 'intrawar cases are important, both because they offer lessons . . . and because intrawar preventive strikes against [nuclear, biological, or chemical] programs are possible in the future'. See Reiter 'Preventive Attacks against Nuclear, Biological, and Chemical Weapons Programs,' 29.

5 Dan Reiter, *Preventive War and its Alternatives: The Lessons of History* (Carlisle, PA: Strategic Studies Institute 2006), 2.

6 Scott Sagan, 'Why Do States Build Nuclear Weapons? Three Models in Search of the Bomb,' *International Security* 21/3 (1996/97), 85.

7 See, for example, Sagan 'Why Do States Build Nuclear Weapons?'; Sonali Singh and Christopher Way, 'The Correlates of Nuclear Proliferation: A Quantitative Test,' *Journal of Conflict Resolution* 48/6 (2004), 859–95; Dong-Joon Jo and Erik Gartzke, 'The Determinants of Nuclear Weapons Proliferation,' *Journal of Conflict Resolution* 51 (2007), 167–94; Etel Solingen, *Nuclear Logics: Contrasting Paths in East Asia and the Middle East* (Princeton, NJ: Princeton UP 2007).

8 See especially Matthew Fuhrmann, 'Spreading Temptation: Proliferation and Peaceful Nuclear Cooperation Agreements,' *International Security* 34/1 (2009), 7–41; Matthew Fuhrmann, 'Taking a

Walk on the Supply Side: The Determinants of Civilian Nuclear Cooperation,' *Journal of Conflict Resolution* 53/2 (2009), 181–208; Matthew Kroenig, 'Importing the Bomb: Sensitive Nuclear Assistance and Nuclear Proliferation,' *Journal of Conflict Resolution* 53/2 (2009), 161–180.

9 Jo and Gartzke, 'The Determinants of Nuclear Weapons Proliferation'.

10 See Gary Gardner, *Nuclear Nonproliferation: A Primer* (London: Lynne Rienner 1994), 16–17.

11 Some scholars do not classify reactors as sensitive nuclear technology. We include it on our list since reactors produce plutonium in spent nuclear fuel that could be reprocessed into bomb grade material. See M.D. Zentner *et al.*, *Nuclear Proliferation Technology Trends Analysis, 2005* (Richland, WA: United States Department of Energy, Pacific Northwest National Lab 2005).

12 For a similar discussion, see Reiter, 'Preventive Attacks against Nuclear Programs.'

13 See M.D. Zentner *et al.*, *Nuclear Proliferation Technology Trends Analysis*.

14 Ibid.

15 Reiter, 'Preventive Attacks against Nuclear, Biological, and Chemical Weapons Programs.'

16 Jeremy Tamsett, 'The Israeli Bombing of Osiraq Reconsidered: Successful Counter-proliferation?' *The Nonproliferation Review*, 11/3 (2004), 70–85.

17 Zentner *et al.*, *Nuclear Proliferation Technology Trends Analysis*.

18 Ibid.

19 See, for example, Duane Bratt, *The Politics of CANDU Exports* (Toronto: U of Toronto P 2006).

20 See, for example, Scott Sagan and Kenneth Waltz, *The Spread of Nuclear Weapons: A Debate Renewed* (New York: W.W. Norton 2002); Fuhrmann and Kreps, 'Targeting Nuclear Programs in War and Peace.'

21 Fuhrmann, 'Spreading Temptation.'

22 David Albright and Kevin O'Neill (eds), *Solving the North Korean Nuclear Puzzle* (Washington DC: Inst for Science and International Security 2000).

23 Amos Perlmutter *et al.*, *Two Minutes over Baghdad* (London: Routledge 2003).

24 Schlomo Nakdimon, *First Strike: The Exclusive Story of How Israel Foiled Iraq's Attempt to Get the Bomb* (New York: Summit Books 1987); Rodger Claire, *Raid on the Sun: Inside Israel's Secret Campaign that Denied Saddam the Bomb* (New York: Broadway 2004).

25 Reiter, 'Preventive Attacks against Nuclear Programs,' 358.

26 Reiter, *Preventive War*.

27 Tamsett, 'The Israeli Bombing of Osiraq Reconsidered', 71–72.

28 Shai Feldman, 'The Bombing of Osiraq – Revisited,' *International Security* 7/2 (Autumn 1982), 126; Whitney Raas and Austin Long, 'Osirak Redux? Assessing Israeli Capabilities to Destroy Iranian Nuclear Facilities,' *International Security*, 31/4 (2007), 10–11; Tim Keeley, 'Angry French Contend Osirak Couldn't Have Served Weapons Purposes,' *Nucleonics Week*, 18 June 1981, 3.

29 'Warn Mitterrand about Iraqi Nuclear Reactor,' *United Press International*, 18 Mar. 1982.

30 Tamsett, 'The Israeli Bombing of Osiraq Reconsidered'.

31 Keeley, 'Angry French.'

32 David Kay, 'Denial and Deception Practices of WMD Proliferators: Iraq and Beyond,' *Washington Quarterly*, 18/1 (Jan. 1995), 85.

33 David Albright and Robert Kelley, 'Massive Programs, Meager Results,' *Bulletin of the Atomic Scientists* (Nov./Dec. 1995), 56–64.

34 Ibid.

35 Mahdi Obeidi and Kurt Pitzer, *The Bomb in My Garden: The Secrets of Saddam's Nuclear Mastermind* (New York: Wiley 2004), 103.

36 Reiter, 'Preventive Attacks against Nuclear Programs,' 362.

37 Obeidi and Pitzer, *The Bomb in My Garden*, 104.

38 Iraq Survey Group, 'Final Report' 2004, <http://www.globalsecurity.org/wmd/library/report/2004/isg-final-report>.

39 Edward Cody, 'France Plans to Bar Weapons-Grade Fuel for Iraq's Reactor,' *Washington Post*, 13 Jan. 1982.

40 Tim Keeley, 'France Has Told Iraq it is Fully Willing to Rebuild,' *Nucleonics Week*, 27 Aug. 1981, 2; Ann MacLachlan, 'French-Iraqi Accord Makes No Provision for Rebuilding Reactor,' *Nucleonics Week*, 24/35 (1983), 1.'

41 Ann MacLachlan, 'French-Iraqi Accord'.

42 Obeidi and Pitzer, *The Bomb in My Garden*, 52.

43 Fuhrmann, 'Taking a Walk.'

44 See, for example, IAEA Director General Sigvard Edlund's statement in 'Peaceful Nuclear Development Must Continue,' *IAEA Bulletin* 23/3 (Dec. 1981), 4–5.

45 Bill Gertz and Sara Carter, 'US: Syria Hid N. Korea–Aided Nukes Plant,' *Washington Times*, 24 Apr. 2008.

46 Leonard Spector and Avner Cohen, 'Israel's Airstrike on Syria's Reactor: Implications for the Nonproliferation Regime,' *Arms Control Today*, 38/6 (2008), 15–21.

47 United States Director of National Intelligence, 'Background Briefing with Senior US Officials on Syria's Covert Nuclear Reactor and North Korea's Involvement,' 24 Apr. 2008, <www.dni.gov/interviews/20080424_interview.pdf>.

48 David Albright and Paul Brannan, 'The Al Kibar Reactor: Extraordinary Camouflage, Troubling Implications,' Inst. for Science and International Security, 2008.

49 Peter Crail, 'US Shares Information on NK-Syrian Nuclear Ties,' *Arms Control Today* (May 2008).

50 Zentner *et al.*, *Nuclear Proliferation Technology Trends Analysis*.

51 Greg Miller and Paul Richter, 'US Offers Evidence of North Korea–Syria Nuclear Plant,' *New York Times*, 25 Apr. 2008; Yossi Melman, 'IAEA Asks for Information on any Syrian Plans,' *Haaretz*, 15 Oct. 2007.

52 Borzou Daragahi, 'IAEA to Send Inspectors to Syria's Alleged Nuclear Site,' *Los Angeles Times*, 3 June 2008.

53 International Atomic Energy Agency, *Implementation of the NPT Safeguards Agreement in the Syrian Arab Republic* (Vienna, Austria: IAEA Board of Governors 2008).

54 Ibid.

55 Peter Crail, 'IAEA Finds Uranium at Second Syrian Site,' *Arms Control Today*, Jul./Aug. 2009.

56 Damien McElroy, 'Uranium Found in Syria by UN Nuclear Inspectors,' *Telegraph*, 10 Nov. 2008.

57 Joby Warrick, 'Syrian Facility Looked like Reactor, UN Says,' *Washington Post*, 20 Nov. 2008; Reuters, 'Report: IAEA Finds Traces of Uranium at Suspected Syrian Nuclear Site,' 10 Nov. 2008.

58 John S. Craig, *Peculiar Liaisons in War, Espionage, and Terrorism in the 20th Century* (New York: Algora Pub 2005); Thomas Powers, *Heisenberg's War: The Secret History of the German Bomb* (New York: Penguin Books 1993).

59 Powers, *Heisenberg's War*; Knut Haukelid, *Skis against the Atom* (London: W. Kimber 1954); Jeremy Bernstein, *Hitler's Uranium Club* (Woodbury, NY: American Inst. of Physics 1996).

60 Powers, *Heisenberg's War*.

61 Per F. Dahl, *Heavy Water and the Wartime Race for Nuclear Energy* (London: Taylor and Francis 1999).

62 Lesley Groves, *Now it Can be Told: The Story of the Manhattan Project*, New Ed. (Da Capo P 1983), 188.

63 Samuel Goudsmit, *Alsos* (American Inst of Physics 2006); Powers, *Heisenberg's War*.

64 Groves, *Now it Can be Told*; Bernstein, *Hitler's Uranium Club*.

65 The problem is that Germany had chosen heavy water as a moderator for its reactors in 1939, but the Norsk-Hydro plant, in occupied Norway, was the only source of heavy water for the German program. Dahl, *Heavy Water*.

66 'The Ghosts that Hit Osirak,' *The Economist*, 18 Oct. 1980, p.54.

67 Mark Hibbs, 'Bushehr Construction Now Remote after Three Iraqi Air Strikes,' *Nucleonics Week*, 28/48 (1987); Mark Hibbs, 'Iraqi Attack on Bushehr Kills West German Nuclear Official,' *Nucleonics Week*, 28/47 (1987); Andrew Koch and Jeanette Wolf, 'Iran's Nuclear Facilities: A Profile,' Center for Nonproliferation Studies, 1998, <http://cns.miis.edu/pubs/reports/pdfs/iranrpt.pdf>.

68 Padraic Sweeney, 'Iran Asks IAEA to Inspect Damage from Alleged Iraqi Attack on Bushehr,' *Nucleonics Week*, 26/8 (1985); Associated Press, 'Agency Iranian Complaint of Iraqi Attack on Nuclear Site,' 30 May 1984.

69 Hibbs, 'Bushehr Construction.'

70 Tony Walker, 'Tehran Says 10 Die as Iraq Hits Nuclear Site,' *Financial Times*, 18 Nov. 1987, 3.

71 Mark Hibbs, 'Bonn will Decline Teheran Bid to Resuscitate Bushehr Project,' *Nucleonics Week*, 32/18 (1987); *Nuclear News*, 'German Reactor Expert Killed in Bushehr Attack,' Jan. 1998, 61.

72 Koch and Wolf, 'Iran's Nuclear Facilities: A Profile'.

73 Thomas A. Keaney and Eliot A. Cohen (eds), *Gulf War Air Power Survey: Summary Report* (Washington, DC: USGPO 1993), 80.

74 Iraq Survey Group, 'Final Report', 2004.
75 Ibid.
76 Keaney and Cohen (eds), *Gulf War Air Power Survey: Summary Report*, 82.
77 Ibid., 431.
78 Ibid., 431, 434.
79 Federation of American Scientists, 'Zaafaraniyah,' 2000, <www.fas.org/nuke/guide/iraq/facility/zaafaraniyah.htm>.
80 Michael Walzer, *Just and Unjust Wars: A Moral Argument with Historical Illustrations* (New York: Basic Books 2000).
81 Michael S. Goodman and Wyn Q. Bowen, 'Behind Iran's Nuclear Weapons "Halt," ' *Bulletin of the Atomic Scientist*s, 19 Feb. 2008.
82 For more on when and why states target suspected proliferators' nuclear facilities, see Fuhrmann and Kreps, 'Targeting Nuclear Programs in War and Peace.'
83 Zentner *et al.*, *Nuclear Proliferation Technology Trends Analysis*.
84 See, for example, Caitlin Talmadge, 'Closing Time: Assessing the Iranian Threat to the Strait of Hormuz,' *International Security*, 33/1 (Summer 2008), 82–117.
85 International Atomic Energy Agency, *Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran*, GOV/2006/8 (Vienna, Austria: IAEA Board of Governors 27 Feb. 2006). See also Michael Eisenstadt, 'Iran: The Complex Calculus of Preventive Military Action,' Washington Institute for Near East Policy, Policy Watch #1152, 25 Sept. 2006.
86 International Atomic Energy Agency, 'Implementation of the NPT Safeguards Agreement and Relevant Provisions of Security Council Resolutions 1737 (2006), 1747 (2007), 1803 (2008) and 1805 (2008) in the Islamic Republic of Iran,' Report by the Director General, International Atomic Energy Agency, 16 Nov. 2009. See also, Nuclear Threat Initiative, 'Iran: Nuclear Overview,' March 2010, <http://www.nti.org/country-profiles/iran/>.
87 Raas and Long, 'Osirak Redux?'.
88 See John E. Peters *et al.*, 'Allied Power Projection Capabilities,' in *Persian Gulf Security: Improving Allied Military Contributions* (Arlington, VA: Rand Corp 2001), 75; Ryan Hansen, 'JDAM Continues to be Warfighter's Weapon of Choice,' *Air Force Link*, 17 Mar. 2006, <www.af.mil/news/story.asp?storyID=123017613>.
89 William Burr and Jeffrey Richelson, 'Whether to Strangle the Baby in the Cradle,' *International Security* 25/3 (Winter 2000/1), 54–99; Joel Wit *et al.*, *Going Critical: The First North Korean Nuclear Crisis* (Washington DC: Brookings Institution Press 2005).

Bibliography

Albright, David and Paul Brannan, 'The Al Kibar Reactor: Extraordinary Camouflage, Troubling Implications,' Inst. for Science and International Security, 2008.

Albright, David and Robert Kelley, 'Massive Programs, Meager Results,' *Bulletin of the Atomic Scientists* (Nov./Dec. 1995), 56–64.

Albright, David and Kevin O'Neill (eds), *Solving the North Korean Nuclear Puzzle* (Washington DC: Inst for Science and International Security 2000).

Associated Press, 'Agency Iranian Complaint of Iraqi Attack on Nuclear Site,' 30 May 1984.

Bernstein, Jeremy, *Hitler's Uranium Club* (Woodbury, NY: American Inst. of Physics 1996).

Betts, Richard K., 'The Osirak Fallacy,' *The National Interest* 83 (2006), 22–5.

Black, Ian and Simon Tisdall, 'Saudi Arabia Urges US Attack on Iran to Stop Nuclear Programme,' *The Guardian*, 28 Nov. 2010.

Bratt, Duane, *The Politics of CANDU Exports* (Toronto: U of Toronto P 2006).

Burr, William and Jeffrey Richelson, 'Whether to Strangle the Baby in the Cradle,' *International Security* 25/3 (Winter 2000/1), 54–99.

Claire, Rodger, *Raid on the Sun: Inside Israel's Secret Campaign that Denied Saddam the Bomb* (New York: Broadway 2004).

Cody, Edward, 'France Plans to Bar Weapons-Grade Fuel for Iraq's Reactor,' *Washington Post*, 13 Jan. 1982.

Craig, John S., *Peculiar Liaisons in War, Espionage, and Terrorism in the 20th Century* (New York: Algora Pub 2005).

Crail, Peter, 'IAEA Finds Uranium at Second Syrian Site,' *Arms Control Today*, Jul./Aug. 2009.

Crail, Peter, 'US Shares Information on NK-Syrian Nuclear Ties,' *Arms Control Today* (May 2008).

Dahl, Per F., *Heavy Water and the Wartime Race for Nuclear Energy* (London: Taylor and Francis 1999).

Daragahi, Borzou, 'IAEA to Send Inspectors to Syria's Alleged Nuclear Site,' *Los Angeles Times*, 3 June 2008.

Eisenstadt, Michael, 'Iran: The Complex Calculus of Preventive Military Action,' Washington Institute for Near East Policy, Policy Watch #1152, 25 Sept. 2006.

Federation of American Scientists, 'Zaafaraniyah,' 2000, <www.fas.org/nuke/guide/iraq/facility/zaafaraniyah.htm>.

Feldman, Shai, 'The Bombing of Osiraq – Revisited,' *International Security* 7/2 (Autumn 1982), 114–42.

Fuhrmann, Matthew, 'Spreading Temptation: Proliferation and Peaceful Nuclear Cooperation Agreements,' *International Security* 34/1 (2009), 7–41.

Fuhrmann, Matthew, 'Taking a Walk on the Supply Side: The Determinants of Civilian Nuclear Cooperation,' *Journal of Conflict Resolution* 53/2 (2009), 181–208.

Fuhrmann, Matthew and Sarah E. Kreps, 'Targeting Nuclear Programs in War and Peace: A Quantitative Empirical Analysis, 1941–2000,' *Journal of Conflict Resolution* 54/6 (2010), 831–59.

Gardner, Gary, *Nuclear Nonproliferation: A Primer* (London: Lynne Rienner 1994).

Gertz, Bill and Sara Carter, 'US: Syria Hid N. Korea–Aided Nukes Plant,' *Washington Times*, 24 Apr. 2008.

'The Ghosts that Hit Osirak,' *The Economist*, 18 Oct. 1980, p.54.

Goodman, Michael S. and Wyn Q. Bowen, 'Behind Iran's Nuclear Weapons "Halt," ' *Bulletin of the Atomic Scientists*, 19 Feb. 2008.

Goudsmit, Samuel, *Alsos* (American Inst of Physics 2006).

Groves, Lesley, *Now it Can be Told: The Story of the Manhattan Project*, New Ed. (Da Capo P 1983).

Gulf War Air Power Survey (GWAPS), Vol. 1, 'Planning and Command and Control,' Washington DC: Government Printing Office 1993.

Gulf War Air Power Survey (GWAPS), Vol. 2, 'Planning and Command and Control,' Washington DC: Government Printing Office 1993.

Hansen, Ryan, 'JDAM Continues to be Warfighter's Weapon of Choice,' *Air Force Link*. 17 Mar. 2006, <www.af.mil/news/story.asp?storyID=123017613>.

Haukelid, Knut, *Skis against the Atom* (London: W. Kimber 1954).

Hibbs, Mark, 'Bonn will Decline Teheran Bid to Resuscitate Bushehr Project,' *Nucleonics Week*, 32/18 (1987).

Hibbs, Mark, 'Bushehr Construction Now Remote after Three Iraqi Air Strikes,' *Nucleonics Week*, 28/48 (1987).

Hibbs, Mark, 'Iraqi Attack on Bushehr Kills West German Nuclear Official,' *Nucleonics Week*, 28/47 (1987).

International Atomic Energy Agency, *Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran*, GOV/2006/8 (Vienna, Austria: IAEA Board of Governors 27 Feb. 2006).

International Atomic Energy Agency, 'Implementation of the NPT Safeguards Agreement and Relevant Provisions of Security Council Resolutions 1737 (2006), 1747 (2007), 1803 (2008) and 1805 (2008) in the Islamic Republic of Iran,' Report by the Director General, International Atomic Energy Agency, 16 Nov. 2009.

International Atomic Energy Agency, *Implementation of the NPT Safeguards Agreement in the Syrian Arab Republic* (Vienna, Austria: IAEA Board of Governors 2008).

Iraq Survey Group, 'Final Report', 2004, <www.globalsecurity.org/wmd/library/report/2004/isg-final-report/>.

Jo, Dong-Joon and Erik Gartzke, 'The Determinants of Nuclear Weapons Proliferation,' *Journal of Conflict Resolution* 51 (2007), 167–94.

Kay, David, 'Denial and Deception Practices of WMD Proliferators: Iraq and Beyond,' *Washington Quarterly*, 18/1 (Jan. 1995), 85.

Keaney, Thomas A. and Eliot A. Cohen (eds), *Gulf War Air Power Survey: Summary Report* (Washington, DC: USGPO 1993).

Keeley, Tim, 'Angry French Contend Osirak Couldn't Have Served Weapons Purposes,' *Nucleonics Week*, 18 June 1981, 3.

Keeley, Tim, 'France has Told Iraq it is Fully Willing to Rebuild,' *Nucleonics Week*, 27 Aug. 1981, 2

Koch, Andrew and Jeanette Wolf, 'Iran's Nuclear Facilities: A Profile,' Center for Nonproliferation Studies, 1998, <http://cns.miis.edu/pubs/reports/pdfs/iranrpt.pdf>.

Kroenig, Matthew, 'Importing the Bomb: Sensitive Nuclear Assistance and Nuclear Proliferation,' *Journal of Conflict Resolution* 53/2 (2009), 161–180.

MacLachlan, Ann, 'France's Prime Minister Denies He Promised to Rebuild the Osirak Reactor,' *Nucleonics Week*, 28/33 (1987), 16.

MacLachlan, Ann, 'French-Iraqi Accord Makes No Provision for Rebuilding Reactor,' *Nucleonics Week*, 24/35 (1983), 1.

McElroy, Damien, 'Uranium Found in Syria by UN Nuclear Inspectors,' *Telegraph*, 10 Nov. 2008.

Melman, Yossi, 'IAEA Asks for Information on any Syrian Plans,' *Haaretz*, 15 Oct. 2007.

Miller, Greg and Paul Richter, 'US Offers Evidence of North Korea–Syria Nuclear Plant,' *New York Times*, 25 Apr. 2008.

Nakdimon, Schlomo, *First Strike: The Exclusive Story of How Israel Foiled Iraq's Attempt to Get the Bomb* (New York: Summit Books 1987).

Nuclear News, 'German Reactor Expert Killed in Bushehr Attack,' Jan. 1998, 61.

Nuclear Threat Initiative, 'Iran: Nuclear Overview,' March 2010, <http://www.nti.org/country-profiles/iran/>.

Obeidi, Mahdi and Kurt Pitzer, *The Bomb in My Garden: The Secrets of Saddam's Nuclear Mastermind* (New York: Wiley 2004).

'Peaceful Nuclear Development Must Continue,' *IAEA Bulletin* 23/3 (Dec. 1981), 4–5.

Perlmutter, Amos, Michael I. Handel, and Uri Bar-Joseph, *Two Minutes over Baghdad* (London: Routledge 2003).

Peters, John E., David Shlapak, and Timothy Liston, 'Allied Power Projection Capabilities,' in Richard Sokolsky, Stuart E. Johnson, F. Stephen Larrabee, Ian O. Lesser, John E. Peters, David A. Shlapak and Timothy Liston (eds), *Persian Gulf Security: Improving Allied Military Contributions* (Arlington, VA: Rand Corp 2001), 71–104.

Powers, Thomas, *Heisenberg's War: The Secret History of the German Bomb* (New York: Penguin Books 1993).

Raas, Whitney and Austin Long, 'Osirak Redux? Assessing Israeli Capabilities to Destroy Iranian Nuclear Facilities,' *International Security*, 31/4 (2007), 7–33.

Ramberg, Bennett, 'Preemption Paradox,' *Bulletin of Atomic Scientists*, Jul./Aug. 2006, 48–56.

Reiter, Dan, 'Preventive Attacks against Nuclear, Biological, and Chemical Weapons Programs: The Track Record,' in William Walton Keller and Gordon R. Mitchell (eds), *Hitting First, Preventive Force in US Security Strategy* (Pittsburgh, PA: Pittsburgh UP 2006).

Reiter, Dan, 'Preventive Attacks against Nuclear Programs and the "Success" at Osiraq,' *Nonproliferation Review*, (12 July 2005), 355–371.

Reiter, Dan, *Preventive War and its Alternatives: The Lessons of History* (Carlisle, PA: Strategic Studies Institute 2006).

Reuters, 'Report: IAEA Finds Traces of Uranium at Suspected Syrian Nuclear Site,' 10 Nov. 2008.

Sagan, Scott, 'Why Do States Build Nuclear Weapons? Three Models in Search of the Bomb,' *International Security* 21/3 (1996/97), 54–86.

Sagan, Scott and Kenneth Waltz, *The Spread of Nuclear Weapons: A Debate Renewed* (New York, W.W. Norton 2002).

Singh, Sonali and Christopher Way, 'The Correlates of Nuclear Proliferation: A Quantitative Test,' *Journal of Conflict Resolution* 48/6 (2004), 859–95.

Solingen, Etel, *Nuclear Logics: Contrasting Paths in East Asia and the Middle East* (Princeton, NJ: Princeton UP 2007).

Spector, Leonard S. and Avner Cohen, 'Israel's Airstrike on Syria's Reactor: Implications for the Nonproliferation Regime,' *Arms Control Today*, 38/6 (2008), 15–21.

Sweeney, Padraic, 'Iran Asks IAEA to Inspect Damage from Alleged Iraqi Attack on Bushehr,' *Nucleonics Week*, 26/8 (1985).

Talmadge, Caitlin, 'Closing Time: Assessing the Iranian Threat to the Strait of Hormuz,' *International Security*, 33/1 (Summer 2008), 82–117.

Tamsett, Jeremy, 'The Israeli bombing of Osiraq Reconsidered: Successful Counterproliferation?' *The Nonproliferation Review*, 11/3 (2004), 70–85.

United States Director of National Intelligence, 'Background Briefing with Senior US Officials on Syria's Covert Nuclear Reactor and North Korea's Involvement,' 24 Apr. 2008, <www.dni.gov/ interviews/20080424_interview.pdf>.

Walker, Tony, 'Tehran Says 10 Die as Iraq Hits Nuclear Site,' *Financial Times*, 18 Nov. 1987, 3.

Walzer, Michael, *Just and Unjust Wars: A Moral Argument with Historical Illustrations* (New York: Basic Books 2000).

'Warn Mitterrand about Iraqi Nuclear Reactor,' *United Press International*, 18 Mar. 1982.

Warrick, Joby, 'Syrian Facility Looked like Reactor, UN Says,' *Washington Post*, 20 Nov. 2008.

Wit, Joel, Daniel Poneman, and Robert Gallucci, *Going Critical: The First North Korean Nuclear Crisis* (Washington DC: Brookings Institution P 2005).

Zentner, M.D., G.L Coles, and R.J. Talbert, *Nuclear Proliferation Technology Trends Analysis, 2005* (Richland, WA: United States Department of Energy, Pacific Northwest National Lab 2005).

Part V

Irregular warfare and small wars

Introduction

The four essays in Part V explore irregular warfare, asymmetric warfare and terrorism. The first selection is an essay by T.E. Lawrence ("Lawrence of Arabia," 1888–1935) on the "Science of Guerrilla Warfare". Drawing upon his experience in the Arab Revolt (1916–1918), Lawrence contrasts insurgents, whom he characterizes as "a thing invulnerable, intangible, without front or back, drifting about like a gas", with conventional units, which he likens to plants, "immobile as a whole, firm-rooted, nourished through long stems to the head". Whereas conventional forces seek to inflict casualties on their adversaries, insurgents attempt to avoid contact: "the contest was not physical, but moral, and so battles were a mistake". Overall, he argues that a successful rebellion requires a secure base of operations and a sympathetic population. As he puts it, "rebellions can be made by 2% active in a striking force, and 98% passively sympathetic".

The second selection is from Mao Tse Tung's "Strategy in China's Revolutionary War". As a leader of the Chinese Communist Party during the Chinese Civil War, Mao (1893–1976) was both a theorist and a practitioner. Whereas Sun Tzu (see Part II) argued that a protracted war was undesirable, Mao writes that it is only through protracted operations that an insurgency can overcome its material inferiority. In Mao's formulation, a revolutionary conflict takes the form of a strategic defensive followed by a strategic offensive. As he puts it,

> Strategic retreat is aimed solely at switching over to the offensive and is merely the first stage of the strategic defensive. The decisive link in the entire strategy is whether victory can be won in the stage of the counter-offensive which follows.

Drawing upon both ancient Chinese history as well as the experience of the Chinese Civil War, Mao argues that a revolutionary war is mobile warfare characterized by a lack of front lines. Insurgents need to pick their battles, engaging when they can win but avoiding battle when they cannot.

The third piece, by Peter R. Neumann and Michael L.R. Smith, explores terrorism as a military strategy. They argue that strategic terrorism follows a distinctive modus operandi: alienating the authorities from their citizens, inducing the government to respond in a manner that favours the insurgents, and exploiting the emotional impact of

the violence to establish legitimacy. Such a strategy, however, is based on assumptions about the behaviour of the target population and government that are now always warranted. Strategic terrorism is therefore often an unreliable strategy.

The final selection by Frank G. Hoffman of the US National Defense University's Institute for National Strategic Studies in Washington is entitled "Hybrid Warfare and Challenges". He reminds readers that tomorrow's irregular enemies will remain cunning and illusive, and regular armed forces need to think creatively to prepare to deal with them, especially in an era when the operational categories of terrorism and conventional, state and non-state, criminal and irregular warfare are blurred. Future threats, Hoffman argues, are likely to be much more hybrid in character than past wars, incorporating the full range of modes of warfare, including conventional capabilities, irregular tactics and formations, as well as terrorism and criminal activity. Armed forces preparing for tomorrow's hybrid wars need to adopt flexible and diverse force structures, must place a premium on learning how to adapt to fast-changing operational environments, must learn how to exploit advances in information technology and precision-guided munitions, and learn how to operate among civilian populations. As Hoffman concludes, armed forces that remain fixed on waging conventional conflicts will be confounded by the hybridity of future wars.

Study questions

1   To what extent are Lawrence's and Mao's ideas about irregular warfare applicable in the early twenty-first century?
2   What are the similarities and differences between insurgency and terrorism?
3   What insights does strategic theory provide in thinking about irregular warfare? How should the future challenge of hybrid wars be met?

Further reading

Arreguin-Toft, Ivan, *How the Weak Win Wars: A Theory of Asymmetric Conflict* (Cambridge: Cambridge University Press, 2005).

Dixon, Paul, "'Hearts and Minds'? British Counter-Insurgency from Malaya to Iraq", *Journal of Strategic Studies* 32, no. 3 (2009), 353–381.

Farrell, Theo, "Improving in War: Military Adaptation and the British in Helmand Province, Afghanistan, 2006–2009", *Journal of Strategic Studies* 33, no. 4 (2010), 567–594.

Galula, David, *Counterinsurgency Warfare: Theory and Practice*, Praeger Security International Academy (1964).

Hack, Karl, "The Malayan Emergency as Counter-Insurgency Paradigm", *Journal of Strategic Studies* 32, no. 3 (2009), 383–414.

Kilcullen, David J., "Countering Global Insurgency", *Journal of Strategic Studies* 28, no. 4 (2005), 597–617.

Kitson, Frank, *Low-Intensity Operations: Subversion, Insurgency, and Peacekeeping* (Mechanicsburg, PA: Stackpole Books, 1971).

Mahnken, Thomas G., "Why the Weak Win: Strong Powers, Weak Powers and the Logic of Strategy", in Bradford A. Lee and Karl F. Walling (eds) *Strategic Logic and Political Rationality* (London: Frank Cass, 2003).

Michaels, Jeffrey H. "Managing Global Counterinsurgency: The Special Group (CI) 1962–1966", *Journal of Strategic Studies*, 35, no. 1 (2012), 33–61.

Rid, Thomas, "The Nineteenth Century Origins of Counterinsurgency Doctrine", *Journal of Strategic Studies*, 33, no. 5 (2010), 727–758.

Roberts, Adam, "The 'War on Terror' in Historical Perspective", *Survival* 47, no. 2 (2005), 101–130.

Russell, James A. "Innovation in War: Counterinsurgency Operations in Anbar and Ninewa Provinces, Iraq, 2005–2007", *Journal of Strategic Studies* 33, no. 4 (2010), 595–624.

Trinquier, Roger, *Modern Warfare: A French View of Counterinsurgency* (Fort Leavenworth, KS: US Army Command and General Staff College, 1985).

Ucko, David, "Countering Insurgents through Distributed Operations: Insights from Malaya 1948–1960", *Journal of Strategic Studies* 30, no. 1 (2007), 47–72.

Wilner, Alex S., "Deterring the Undeterrable: Coercion, Denial, and Delegitimization in Counterterrorism", *Journal of Strategic Studies* 34, no. 1 (2011), 3–37.

This page intentionally left blank

15 Science of guerrilla warfare

T.E. Lawrence

This study of the science of guerrilla, or irregular, warfare is based on the concrete experience of the Arab Revolt against the Turks 1916–1918. But the historical example in turn gains value from the fact that its course was guided by the practical application of the theories here set forth.

The Arab Revolt began in June, 1916, with an attack by the half-armed and inexperienced tribesmen upon the Turkish garrisons in Medina and about Mecca. They met with no success, and after a few days' effort withdrew out of range and began a blockade. This method forced the early surrender of Mecca, the more remote of the two centres. Medina, however, was linked by railway to the Turkish main army in Syria, and the Turks were able to reinforce the garrison there. The Arab forces which had attacked it then fell back gradually and took up a position across the main road to Mecca.

At this point the campaign stood still for many weeks. The Turks prepared to send an expeditionary force to Mecca, to crush the revolt at its source, and accordingly moved an army corps to Medina by rail. Thence they began to advance down the main western road from Medina to Mecca, a distance of about 250 miles. The first 50 miles were easy, then came a belt of hills 20 miles wide, in which were Feisal's Arab tribesmen standing on the defensive: next a level stretch, for 70 miles along the coastal plain to Rabegh, rather more than half-way. Rabegh is a little fort on the Red Sea, with good anchorage for ships, and because of its situation was regarded as the key to Mecca. Here lay Sherif Ali, Feisal's eldest brother, with more tribal forces, and the beginning of an Arab regular army, formed from officers and men of Arab blood who had served in the Turkish Army. As was almost inevitable in view of the general course of military thinking since Napoleon, the soldiers of all countries looked only to the regulars to win the war. Military opinion was obsessed by the dictum of Foch that the ethic of modern war is to seek for the enemy army, his centre of power, and destroy it in battle. Irregulars would not attack positions and so they were regarded as incapable of forcing a decision.

While these Arab regulars were still being trained, the Turks suddenly began their advance on Mecca. They broke through the hills in 24 hours, and so proved the second theorem of irregular war—namely, that irregular troops are as unable to defend a point or line as they are to attack it. This lesson was received without gratitude, for the Turkish success put the Rabegh force in a critical position, and it was not capable of repelling the attack of a single battalion, much less of a corps.

In the emergency it occurred to the author that perhaps the virtue of irregulars lay in depth, not in face, and that it had been the threat of attack by them upon the Turkish northern flank which had made the enemy hesitate for so long. The actual Turkish flank ran from their front line to Medina, a distance of some 50 miles: but, if the Arab force moved towards the Hejaz railway behind Medina, it might stretch its threat (and, accordingly, the enemy's flank) as far, potentially, as Damascus 800 miles away to the north. Such a move would force the Turks to the defensive, and the Arab force might regain the initiative. Anyhow, it seemed the only chance, and so, in January 1917, Feisal's tribesmen turned their backs on Mecca, Rabegh and the Turks, and marched away north 200 miles to Wejh.

This eccentric movement acted like a charm. The Arabs did nothing concrete, but their march recalled the Turks (who were almost into Rabegh) all the way back to Medina. There, one half of the Turkish force took up the entrenched position about the city, which it held until after the Armistice. The other half was distributed along the railway to defend it against the Arab threat. For the rest of the war … the Turks stood on the defensive and the Arab tribesmen won advantage over advantage till, when peace came, they had taken 35,000 prisoners, killed and wounded and worn out about as many, and occupied 100,000 square miles of the enemy's territory, at little loss to themselves. However, although Wejh was the turning point its significance was not yet realized. For the moment the move thither was regarded merely as a preliminary to cutting the railway in order to take Medina, the Turkish headquarters and main garrison.

Strategy and tactics

However, the author was unfortunately as much in charge of the campaign as he pleased, and lacking a training in command sought to find an immediate equation between past study of military theory and the present movements—as a guide to, and an intellectual basis for, future action. The text books gave the aim in war as "the destruction of the organized forces of the enemy" by "the one process battle." Victory could only be purchased by blood. This was a hard saying, as the Arabs had no organized forces, and so a Turkish Foch would have no aim: and the Arabs would not endure casualties, so that an Arab Clausewitz could not buy his victory. These wise men must be talking metaphors, for the Arabs were indubitably winning their war. . . and further reflection pointed to the deduction that they had actually won it. They were in occupation of 99% of the Hejaz. The Turks were welcome to the other fraction till peace or doomsday showed them the futility of clinging to the window pane. This part of the war was over, so why bother about Medina? The Turks sat in it on the defensive, immobile, eating for food the transport animals which were to have moved them to Mecca, but for which there was no pasture in their now restricted lines. They were harmless sitting there; if taken prisoner, they would entail the cost of food and guards in Egypt, if driven out northward into Syria, they would join the main army blocking the British in Sinai. On all counts they were best where they were, and they valued Medina and wanted to keep it. Let them!

This seemed unlike the ritual of war of which Foch had been priest, and so it seemed that there was a difference of kind. Foch called his modern war "absolute." In it two

nations professing incompatible philosophies set out to try them in the light of force. A struggle of two immaterial principles could only end when the supporters of one had no more means of resistance. An opinion can be argued with: a conviction is best shot. The logical end of a war of creeds is the final destruction of one, and Salammbo the classical textbook-instance. These were the lines of the struggle between France and Germany, but not, perhaps, between Germany and England, for all efforts to make the British soldier hate the enemy simply made him hate war. Thus the "absolute war" seemed only a variety of war; and beside it other sorts could be discerned, as Clausewitz had numbered them, personal wars for dynastic reasons, expulsive wars for party reasons, commercial wars for trading reasons.

Now the Arab aim was unmistakably geographical, to occupy all Arabic-speaking lands in Asia. In the doing of it Turks might be killed, yet "killing Turks" would never be an excuse or aim. If they would go quietly, the war would end. If not, they must be driven out: but at the cheapest possible price, since the Arabs were fighting for freedom, a pleasure only to be tasted by a man alive. The next task was to analyse the process, both from the point of view of strategy, the aim in war, the synoptic regard which sees everything by the standard of the whole, and from the point of view called tactics, the means towards the strategic end, the steps of its staircase. In each were found the same elements, one algebraical, one biological, a third psychological. The first seemed a pure science, subject to the laws of mathematics, without humanity. It dealt with known invariables, fixed conditions, space and time, inorganic things like hills and climates and railways, with mankind in type-masses too great for individual variety, with all artificial aids, and the extensions given our faculties by mechanical invention. It was essentially formulable.

In the Arab case the algebraic factor would take first account of the area to be conquered. A casual calculation indicated perhaps 140,000 square miles. How would the Turks defend all that—no doubt by a trench line across the bottom, if the Arabs were an army attacking with banners displayed … but suppose they were an influence, a thing invulnerable, intangible, without front or back, drifting about like a gas? Armies were like plants, immobile as a whole, firm-rooted, nourished through long stems to the head. The Arabs might be a vapour, blowing where they listed. It seemed that a regular soldier might be helpless without a target. He would own the ground he sat on, and what he could poke his rifle at. The next step was to estimate how many posts they would need to contain this attack in depth, sedition putting up her head in every unoccupied one of these 100,000 square miles. They would have need of a fortified post every four square miles, and a post could not be less than 20 men. The Turks would need 600,000 men to meet the combined ill wills of all the local Arab people. They had 100,000 men available. It seemed that the assets in this sphere were with the Arabs, and climate, railways, deserts, technical weapons could also be attached to their interests. The Turk was stupid and would believe that rebellion was absolute, like war, and deal with it on the analogy of absolute warfare.

Humanity in battle

So much for the mathematical element; the second factor was biological, the breaking-point, life and death, or better, wear and tear. Bionomics seemed a good name for it.

The war-philosophers had properly made it an art, and had elevated one item in it, "effusion of blood," to the height of a principle. It became humanity in battle, an art touching every side of our corporal being. There was a line of variability (man) running through all its estimates. Its components were sensitive and illogical, and generals guarded themselves by the device of a reserve, the significant medium of their art. Goltz had said that when you know the enemy's strength, and he is fully deployed, then you know enough to dispense with a reserve. But this is never. There is always the possibility of accident, of some flaw in materials, present in the general's mind: and the reserve is unconsciously held to meet it. There is a "felt" element in troops, not expressible in figures, and the greatest commander is he whose intuitions most nearly happen. Nine-tenths of tactics are certain, and taught in books: but the irrational tenth is like the king-fisher flashing across the pool and that is the test of generals. It can only be ensued by instinct, sharpened by thought practising the stroke so often that at the crisis it is as natural as a reflex.

Yet to limit the art to humanity seemed an undue narrowing down. It must apply to materials as much as to organisms. In the Turkish Army materials were scarce and precious, men more plentiful than equipment. Consequently the cue should be to destroy not the army but the materials. The death of a Turkish bridge or rail, machine or gun, or high explosive was more profitable than the death of a Turk. The Arab army just then was equally chary of men and materials: of men because they being irregulars were not units, but individuals, and an individual casualty is like a pebble dropped in water: each may make only a brief hole, but rings of sorrow widen out from them. The Arab army could not afford casualties. Materials were easier to deal with. Hence its obvious duty to make itself superior in some one branch, guncotton or machine guns, or whatever could be most decisive. Foch had laid down the maxim, applying it to men, of being superior at the critical point and moment of attack. The Arab army might apply it to materials, and be superior in equipment in one dominant moment or respect.

For both men and things it might try to give Foch's doctrine a negative twisted side, for cheapness' sake, and be weaker than the enemy everywhere except in one point or matter. Most wars are wars of contact, both forces striving to keep in touch to avoid tactical surprise. The Arab war should be a war of detachment: to contain the enemy by the silent threat of a vast unknown desert, not disclosing themselves till the moment of attack. This attack need be only nominal, directed not against his men, but against his materials: so it should not seek for his main strength or his weaknesses, but for his most accessible material. In railway cutting this would be usually an empty stretch of rail. This was a tactical success. From this theory came to be developed ultimately an unconscious habit of never engaging the enemy at all. This chimed with the numerical plea of never giving the enemy's soldier a target. Many Turks on the Arab front had no chance all the war to fire a shot, and correspondingly the Arabs were never on the defensive, except by rare accident. The corollary of such a rule was perfect "intelligence," so that plans could be made in complete certainty. The chief agent had to be the general's head (de Feuquière said this first), and his knowledge had to be faultless, leaving no room for chance. The headquarters of the Arab army probably took more pains in this service than any other staff.

The crowd in action

The third factor in command seemed to be the psychological, that science (Xenophon called it diathetic) of which our propaganda is a stained and ignoble part. It concerns the crowd, the adjustment of spirit to the point where it becomes fit to exploit in action. It considers the capacity for mood of the men, their complexities and mutability, and the cultivation of what in them profits the intention. The command of the Arab army had to arrange their men's minds in order of battle, just as carefully and as formally as other officers arranged their bodies: and not only their own men's minds, though them first; the minds of the enemy, so far as it could reach them; and thirdly, the mind of the nation supporting it behind the firing-line, and the mind of the hostile nation waiting the verdict, and the neutrals looking on.

It was the ethical in war, and the process on which the command mainly depended for victory on the Arab front. The printing press is the greatest weapon in the armoury of the modern commander, and the commanders of the Arab army being amateurs in the art, began their war in the atmosphere of the twentieth century, and thought of their weapons without prejudice, not distinguishing one from another socially. The regular officer has the tradition of 40 generations of serving soldiers behind him, and to him the old weapons are the most honoured. The Arab command had seldom to concern itself with what its men did, but much with what they thought, and to it the diathetic was more than half command. In Europe it was set a little aside and entrusted to men outside the General Staff. But the Arab army was so weak physically that it could not let the metaphysical weapon rust unused. It had won a province when the civilians in it had been taught to die for the ideal of freedom: the presence or absence of the enemy was a secondary matter.

These reasonings showed that the idea of assaulting Medina, or even of starving it quickly into surrender, was not in accord with the best strategy. Rather, let the enemy stay in Medina, and in every other harmless place, in the largest numbers. If he showed a disposition to evacuate too soon, as a step to concentrating in the small area which his numbers could dominate effectively, then the Arab army would have to try and restore his confidence, not harshly, but by reducing its enterprises against him. The ideal was to keep his railway just working, but only just, with the maximum of loss and discomfort to him.

The Turkish army was an accident, not a target. Our true strategic aim was to seek its weakest link, and bear only on that till time made the mass of it fall. The Arab army must impose the longest possible passive defence on the Turks (this being the most materially expensive form of war) by extending its own front to the maximum. Tactically it must develop a highly mobile, highly equipped type of force, of the smallest size, and use it successively at distributed points of the Turkish line, to make the Turks reinforce their occupying posts beyond the economic minimum of 20 men. The power of this striking force would not be reckoned merely by its strength. The ratio between number and area determined the character of the war, and by having five times the mobility of the Turks the Arabs could be on terms with them with one-fifth their number.

Range over force

Success was certain, to be proved by paper and pencil as soon as the proportion of space and number had been learned. The contest was not physical, but moral, and so battles were a mistake. All that could be won in a battle was the ammunition the enemy fired off. Napoleon had said it was rare to find generals willing to fight battles. The curse of this war was that so few could do anything else. Napoleon had spoken in angry reaction against the excessive finesse of the eighteenth century, when men almost forgot that war gave licence to murder. Military thought had been swinging out on his dictum for 100 years, and it was time to go back a bit again. Battles are impositions on the side which believes itself weaker, made unavoidable either by lack of land-room, or by the need to defend a material property dearer than the lives of soldiers. The Arabs had nothing material to lose, so they were to defend nothing and to shoot nothing. Their cards were speed and time, not hitting power, and these gave them strategical rather than tactical strength. Range is more to strategy than force. The invention of bully-beef had modified land-war more profoundly than the invention of gunpowder.

The British military authorities did not follow all these arguments, but gave leave for their practical application to be tried. Accordingly the Arab forces went off first to Akaba and took it easily. Then they took Tafileh and the Dead Sea; then Azrak and Deraa, and finally Damascus, all in successive stages worked out consciously on these theories. The process was to set up ladders of tribes, which should provide a safe and comfortable route from the sea-bases (Yenbo, Wejh or Akaba) to the advanced bases of operation. These were sometimes 300 miles away, a long distance in lands without railways or roads, but made short for the Arab Army by an assiduous cultivation of desert-power, control by camel parties of the desolate and unmapped wilderness which fills up all the centre of Arabia, from Mecca to Aleppo and Baghdad.

The desert and the sea

In character these operations were like naval warfare, in their mobility, their ubiquity, their independence of bases and communications, in their ignoring of ground features, of strategic areas, of fixed directions, of fixed points. "He who commands the sea is at great liberty, and may take as much or as little of the war as he will": he who commands the desert is equally fortunate. Camel raiding-parties, self-contained like ships, could cruise securely along the enemy's land-frontier, just out of sight of his posts along the edge of cultivation, and tap or raid into his lines where it seemed fittest or easiest or most profitable, with a sure retreat always behind them into an element which the Turks could not enter.

Discrimination of what point of the enemy organism to disarrange came with practice. The tactics were always tip and run, not pushes, but strokes. The Arab army never tried to maintain or improve an advantage, but to move off and strike again somewhere else. It used the smallest force in the quickest time at the farthest place. To continue the action till the enemy had changed his dispositions to resist it would have been to break the spirit of the fundamental rule of denying him targets.

The necessary speed and range were attained by the frugality of the desert men, and their efficiency on camels. In the heat of summer Arabian camels will do about 250 miles comfortably between drinks: and this represented three days' vigorous marching. This radius was always more than was needed, for wells are seldom more than 100 miles apart. The equipment of the raiding parties aimed at simplicity, with nevertheless a technical superiority over the Turks in the critical department. Quantities of light machine guns were obtained from Egypt for use not as machine guns, but as automatic rifles, snipers' tools, by men kept deliberately in ignorance of their mechanism, so that the speed of action would not be hampered by attempts at repair. Another special feature was high explosives, and nearly everyone in the revolt was qualified by rule of thumb experience in demolition work.

Armoured cars

On some occasions tribal raids were strengthened by armoured cars, manned by Englishmen. Armoured cars, once they have found a possible track, can keep up with a camel party. On the march to Damascus, when nearly 400 miles off their base, they were first maintained by a baggage train of petrol-laden camels, and afterwards from the air. Cars are magnificent fighting machines, and decisive whenever they can come into action on their own conditions. But though each has for main principle that of "fire in movement," yet the tactical employments of cars and camel-corps are so different that their use in joint operations is difficult. It was found demoralizing to both to use armoured and unarmoured cavalry together.

The distribution of the raiding parties was unorthodox. It was impossible to mix or combine tribes, since they disliked or distrusted one another. Likewise the men of one tribe could not be used in the territory of another. In consequence, another canon of orthodox strategy was broken by following the principle of the widest distribution of force, in order to have the greatest number of raids on hand at once, and fluidity was added to speed by using one district on Monday, another on Tuesday, a third on Wednesday. This much reinforced the natural mobility of the Arab army, giving it priceless advantages in pursuit, for the force renewed itself with fresh men in every new tribal area, and so maintained its pristine energy. Maximum disorder was, in a real sense, its equilibrium.

An undisciplined army

The internal economy of the raiding parties was equally curious. Maximum irregularity and articulation were the aims. Diversity threw the enemy intelligence off the track. By the regular organization in identical battalions and divisions information builds itself up, until the presence of a corps can be inferred on corpses from three companies. The Arabs, again, were serving a common ideal, without tribal emulation, and so could not hope for any *esprit de corps*. Soldiers are made a caste either by being given great pay and rewards in money, uniform or political privileges; or, as in England, by being made outcasts, cut off from the mass of their fellow citizens. There have been many armies enlisted voluntarily: there have been few armies serving voluntarily under such trying

conditions, for so long a war as the Arab revolt. Any of the Arabs could go home whenever the conviction failed him. Their only contract was honour.

Consequently the Arab army had no discipline, in the sense in which it is restrictive, submergent of individuality, the Lowest Common Denominator of men. In regular armies in peace it means the limit of energy attainable by everybody present: it is the hunt not of an average, but of an absolute, a 100-per-cent standard, in which the 99 stronger men are played down to the level of the worst. The aim is to render the unit a unit, and the man a type, in order that their effort shall be calculable, their collective output even in grain and in bulk. The deeper the discipline, the lower the individual efficiency, and the more sure the performance. It is a deliberate sacrifice of capacity in order to reduce the uncertain element, the bionomic factor, in enlisted humanity, and its accompaniment is *compound* or social war, that form in which the fighting man has to be the product of the multiplied exertions of long hierarchy, from workshop to supply unit, which maintains him in the field.

The Arab war, reacting against this, was *simple* and individual. Every enrolled man served in the line of battle, and was self-contained. There were no lines of communication or labour troops. It seemed that in this articulated warfare, the sum yielded by single men would be at least equal to the product of a compound system of the same strength, and it was certainly easier to adjust to tribal life and manners, given elasticity and understanding on the part of the commanding officers. Fortunately for its chances nearly every young Englishman has the roots of eccentricity in him. Only a sprinkling were employed, not more than one per 1,000 of the Arab troops. A larger proportion would have created friction, just because they were foreign bodies (pearls if you please) in the oyster: and those who were present controlled by influence and advice, by their superior knowledge, not by an extraneous authority.

The practice was, however, not to employ in the firing line the greater numbers which the adoption of a "simple" system made available theoretically. Instead, they were used in relay: otherwise the attack would have become too extended. Guerrillas must be allowed liberal work-room. In irregular war if two men are together one is being wasted. The moral strain of isolated action makes this simple form of war very hard on the individual soldier, and exacts from him special initiative, endurance and enthusiasm. Here the ideal was to make action a series of single combats to make the ranks a happy alliance of commanders-in-chief. The value of the Arab army depended entirely on quality, not on quantity. The members had to keep always cool, for the excitement of a blood-lust would impair their science, and their victory depended on a just use of speed, concealment, accuracy of fire. Guerrilla war is far more intellectual than a bayonet charge.

The exact science of guerrilla warfare

By careful persistence, kept strictly within its strength and following the spirit of these theories, the Arab army was able eventually to reduce the Turks to helplessness, and complete victory seemed to be almost within sight when General Allenby, by his immense stroke in Palestine, threw the enemy's main forces into hopeless confusion and put an immediate end to the Turkish war. His too-greatness deprived the Arab revolt of the

opportunity of following to the end the dictum of Saxe that a war might be won without fighting battles. But it can at least be said that its leaders worked by his light for two years, and the work stood. This is a pragmatic argument that cannot be wholly derided. The experiment, although not complete, strengthened the belief that irregular war or rebellion could be proved to be an exact science, and an inevitable success, granted certain factors and if pursued along certain lines.

Here is the thesis: Rebellion must have an unassailable base, something guarded not merely from attack, but from the fear of it: such a base as the Arab revolt had in the Red Sea ports, the desert, or in the minds of men converted to its creed. It must have a sophisticated alien enemy, in the form of a disciplined army of occupation too small to fulfil the doctrine of acreage: too few to adjust number to space, in order to dominate the whole area effectively from fortified posts. It must have a friendly population, not actively friendly, but sympathetic to the point of not betraying rebel movements to the enemy. Rebellions can be made by 2% active in a striking force, and 98% passively sympathetic. The few active rebels must have the qualities of speed and endurance, ubiquity and independence of arteries of supply. They must have the technical equipment to destroy or paralyze the enemy's organized communications, for irregular war is fairly Willisen's definition of strategy, "the study of communication," in its extreme degree, of attack where the enemy is not. In 50 words: Granted mobility, security (in the form of denying targets to the enemy), time and doctrine (the idea to convert every subject to friendliness), victory will rest with the insurgents, for the algebraical factors are in the end decisive, and against them perfections of means and spirit struggle quite in vain.

16 Problems of strategy in China's civil war

Mao Tse Tung

The four principal characteristics of China's revolutionary war are: a vast semi-colonial country which is unevenly developed politically and economically and which has gone through a great revolution; a big and powerful enemy; a small and weak Red Army; and the agrarian revolution. These characteristics determine the line for guiding China's revolutionary war as well as many of its strategic and tactical principles. It follows from the first and fourth characteristics that it is possible for the Chinese Red Army to grow and defeat its enemy. It follows from the second and third characteristics that it is impossible for the Chinese Red Army to grow very rapidly or defeat its enemy quickly; in other words, the war will be protracted and may even be lost if it is mishandled.

These are the two aspects of China's revolutionary war. They exist simultaneously, that is, there are favourable factors and there are difficulties. This is the fundamental law of China's revolutionary war, from which many other laws ensue. The history of our ten years of war has proved the validity of this law. He who has eyes but fails to see this fundamental law cannot direct China's revolutionary war, cannot lead the Red Army to victories.

It is clear that we must correctly settle all the following matters of principle:

Determine our strategic orientation correctly, oppose adventurism when on the offensive, oppose conservatism when on the defensive, and oppose flight-ism when shifting from one place to another.

Oppose guerrilla-ism in the Red Army, while recognizing the guerrilla character of its operations.

Oppose protracted campaigns and a strategy of quick decision, and uphold the strategy of protracted war and campaigns of quick decision.

Oppose fixed battle lines and positional warfare, and favour fluid battle lines and mobile warfare.

Oppose fighting merely to rout the enemy, and uphold fighting to annihilate the enemy.

Oppose the strategy of striking with two "fists" in two directions at the same time, and uphold the strategy of striking with one "fist" in one direction at one time.

Oppose the principle of maintaining one large rear area, and uphold the principle of small rear areas.

Oppose an absolutely centralized command, and favour a relatively centralized command.

Oppose the purely military viewpoint and the ways of roving rebels, and recognize that the Red Army is a propagandist and organizer of the Chinese revolution.

Oppose bandit ways,[1] and uphold strict political discipline.

Oppose warlord ways, and favour both democracy within proper limits and an authoritative discipline in the army.

Oppose an incorrect, sectarian policy on cadres, and uphold the correct policy on cadres.

Oppose the policy of isolation, and affirm the policy of winning over all possible allies.

Oppose keeping the Red Army at its old stage, and strive to develop it to a new stage.

Our present discussion of the problems of strategy is intended to elucidate these matters carefully in the light of the historical experience gained in China's ten years of bloody revolutionary war.

. . .

The strategic defensive

Under this heading I would like to discuss the following problems: (1) active and passive defence; (2) preparations for combating "encirclement and suppression" campaigns; (3) strategic retreat; (4) strategic counter-offensive; (5) starting the counter-offensive; (6) concentration of troops; (7) mobile warfare; (8) war of quick decision; and (9) war of annihilation.

Active and passive defence

Why do we begin by discussing defence? After the failure of China's first national united front of 1924–27, the revolution became a most intense and ruthless class war. While the enemy ruled the whole country, we had only small armed forces; consequently, from the very beginning we have had to wage a bitter struggle against his "encirclement and suppression" campaigns. Our offensives have been closely linked with our efforts to break these "encirclement and suppression" campaigns, and our fate depends entirely on whether or not we are able to break them. The process of breaking an "encirclement and suppression" campaign is usually circuitous and not as direct as one would wish. The primary problem, and a serious one too, is how to conserve our strength and await an opportunity to defeat the enemy. Therefore, the strategic defensive is the most complicated and most important problem facing the Red Army in its operations.

In our ten years of war two deviations often arose with regard to the strategic defensive; one was to belittle the enemy, the other was to be terrified of the enemy.

As a result of belittling the enemy, many guerrilla units suffered defeat, and on several occasions the Red Army was unable to break the enemy's "encirclement and suppression".

When the revolutionary guerrilla units first came into existence, their leaders often failed to assess the enemy's situation and our own correctly. Because they had been successful in organizing sudden armed uprisings in certain places or mutinies among the

White troops, they saw only the momentarily favourable circumstances, or failed to see the grave situation actually confronting them, and so usually understimated the enemy. Moreover, they had no understanding of their own weaknesses (*i.e.*, lack of experience and smallness of forces). It was an objective fact that the enemy was strong and we were weak, and yet some people refused to give it thought, talked only of attack but never of defence or retreat, thus mentally disarming themselves in the matter of defence, and hence misdirected their actions. Many guerrilla units were defeated on this account.

Examples in which the Red Army, for this reason, failed to break the enemy's "encirclement and suppression" campaigns were its defeat in 1928 in the Haifeng-Lufeng area of Kwangtung Province,[2] and its loss of freedom of action in 1932 in the fourth counter-campaign against the enemy's "encirclement and suppression" in the Hupeh-Honan-Anhwei border area, where the Red Army acted on the theory that the Kuomintang army was merely an auxiliary force.

There are many instances of setbacks which were due to being terrified of the enemy.

As against those who underestimated the enemy, some people greatly overestimated him and also greatly underestimated our own strength, as a result of which they adopted an unwarranted policy of retreat and likewise disarmed themselves mentally in the matter of defence. This resulted in the defeat of some guerrilla units, or the failure of certain Red Army campaigns, or the loss of base areas.

The most striking example of the loss of a base area was that of the Central Base Area in Kiangsi during the fifth counter-campaign against "encirclement and suppression". The mistake here arose from a Rightist viewpoint. The leaders feared the enemy as if he were a tiger, set up defences everywhere, fought defensive actions at every step and did not dare to advance to the enemy's rear and attack him there, which would have been to our advantage, or boldly to lure the enemy troops in deep so as to herd them together and annihilate them. As a result, the whole base area was lost and the Red Army had to undertake the Long March of over 12,000 kilometres. However, this kind of mistake was usually preceded by a "Left" error of underestimating the enemy. The military adventurism of attacking the key cities in 1932 was the root cause of the line of passive defence adopted subsequently in coping with the enemy's fifth "encirclement and suppression" campaign.

The most extreme example of being terrified of the enemy was the retreatism of the "Chang Kuo-tao line". The defeat of the Western Column of the Fourth Front Red Army west of the Yellow River[3] marked the final bankruptcy of this line.

Active defence is also known as offensive defence, or defence through decisive engagements. Passive defence is also known as purely defensive defence or pure defence. Passive defence is actually a spurious kind of defence, and the only real defence is active defence, defence for the purpose of counter-attacking and taking the offensive. As far as I know, there is no military manual of value nor any sensible military expert, ancient or modern, Chinese or foreign, that does not oppose passive defence, whether in strategy or tactics. Only a complete fool or a madman would cherish passive defence as a talisman. However, there are people in this world who do such things. That is an error in war, a manifestation of conservatism in military matters, which we must resolutely oppose.

The military experts of the newer and rapidly developing imperialist countries, namely, Germany and Japan, loudly trumpet the advantages of the strategic offensive and are opposed to the strategic defensive. Military thinking of this kind is absolutely unsuited to China's revolutionary war. These military experts assert that a serious weakness of the defensive is that it shakes popular morale, instead of inspiring it. This applies to countries where class contradictions are acute and the war benefits only the reactionary ruling strata or the reactionary political groups in power. But our situation is different. With the slogan of defending the revolutionary base areas and defending China, we can rally the overwhelming majority of the people to fight with one heart and one mind, because we are the oppressed and the victims of aggression. It was also by using the form of the defensive that the Red Army of the Soviet Union defeated its enemies during the civil war. When the imperialist countries organized the Whites for attack, the war was waged under the slogan of defending the Soviets, and even when the October Uprising was being prepared, the military mobilization was carried out under the slogan of defending the capital. In every just war the defensive not only has a lulling effect on politically alien elements, it also makes possible the rallying of the backward sections of the masses to join in the war.

When Marx said that once an armed uprising is started there must not be a moment's pause in the attack,[4] he meant that the masses, having taken the enemy unawares in an insurrection, must give the reactionary rulers no chance to retain or recover their political power, must seize this moment to beat the nation's reactionary ruling forces when they are unprepared, and must not rest content with the victories already won, underestimate the enemy, slacken their attacks or hesitate to press forward, and so let slip the opportunity of destroying the enemy, bringing failure to the revolution. This is correct. It does not mean, however, that when we are already locked in battle with an enemy who enjoys superiority, we revolutionaries should not adopt defensive measures even when we are hard pressed. Only a prize idiot would think in this way.

Taken as a whole, our war has been an offensive against the Kuomintang, but militarily it has assumed the form of breaking the enemy's "encirclement and suppression".

Militarily speaking, our warfare consists of the alternate use of the defensive and the offensive. In our case it makes no difference whether the offensive is said to follow or to precede the defensive, because the crux of the matter is to break the "encirclement and suppression". The defensive continues until an "encirclement and suppression" campaign is broken, whereupon the offensive begins, these being but two stages of the same thing; and one enemy "encirclement and suppression" campaign is closely followed by another. Of the two stages, the defensive is the more complicated and the more important. It involves numerous problems of how to break the "encirclement and suppression". The basic principle here is to stand for active defence and oppose passive defence.

In our civil war, when the strength of the Red Army surpasses that of the enemy, we shall, in general, no longer need the strategic defensive. Our policy then will be the strategic offensive alone. This change will depend on an over-all change in the balance of forces. By that time the only remaining defensive measures will be of a partial character.

Preparations for combating "encirclement and suppression" campaigns

Unless we have made necessary and sufficient preparations against a planned enemy "encirclement and suppression" campaign, we shall certainly be forced into a passive position. To accept battle in haste is to fight without being sure of victory. Therefore when the enemy is preparing an "encirclement and suppression" campaign, it is absolutely necessary for us to prepare our counter-campaign. To be opposed to such preparations, as some people in our ranks were at one time, is childish and ridiculous.

There is a difficult problem here on which controversy may easily arise. When should we conclude our offensive and switch to the phase of preparing our counter-campaign against "encirclement and suppression"? When we are victoriously on the offensive and the enemy is on the defensive, his preparations for the next "encirclement and suppression" campaign are conducted in secret, and therefore it is difficult for us to know when his offensive will begin. If our work of preparing the counter-campaign begins too early, it is bound to reduce the gains from our offensive and will sometimes even have certain harmful effects on the Red Army and the people. For the chief measures in the preparatory phase are the military preparations for withdrawal and the political mobilization for them. Sometimes, if we start preparing too early, this will turn into waiting for the enemy; after waiting a long time without the enemy appearing, we will have to renew our offensive. And sometimes, the enemy will start his offensive just as our new offensive is beginning, thus putting us in a difficult position. Hence the choice of the right moment to begin our preparations is an important problem. The right moment should be determined with due regard both to the enemy's situation and our own and to the relation between the two. In order to know the enemy's situation, we should collect information on his political, military and financial position and the state of public opinion in his territory. In analysing such information we must take the total strength of the enemy into full account and must not exaggerate the extent of his past defeats, but on the other hand we must not fail to take into account his internal contradictions, his financial difficulties, the effect of his past defeats, etc. As for our side, we must not exaggerate the extent of our past victories, but neither should we fail to take full account of their effect.

Generally speaking, however, on the question of timing the preparations, it is preferable to start them too early rather than too late. For the former involves smaller losses and has the advantage that preparedness averts peril and puts us in a fundamentally invincible position.

The essential problems during the preparatory phase are the preparations for the withdrawal of the Red Army, political mobilization, recruitment, arrangements for finance and provisions, and the handling of politically alien elements.

By preparations for the Red Army's withdrawal we mean taking care that it does not move in a direction jeopardizing the withdrawal or advance too far in its attacks or become too fatigued. These are the things the main forces of the Red Army must attend to on the eve of a large-scale enemy offensive. At such a time, the Red Army must devote its attention mainly to planning the selection and preparation of the battle areas, the acquisition of supplies, and the enlargement and training of its own forces.

Political mobilization is a problem of prime importance in the struggle against "encirclement and suppression". That is to say, we should tell the Red Army and the people in the base area clearly, resolutely and fully that the enemy's offensive is inevitable and imminent and will do serious harm to the people, but at the same time, we should tell them about his weaknesses, the factors favourable to the Red Army, our indomitable will to victory and our general plan of work. We should call upon the Red Army and the entire population to fight against the enemy's "encirclement and suppression" campaign and defend the base area. Except where military secrets are concerned, political mobilization must be carried out openly, and, what is more, every effort should be made to extend it to all who might possibly support the revolutionary cause. The key link here is to convince the cadres.

Recruitment of new soldiers should be based on two considerations, first, on the level of political consciousness of the people and the size of the population and, second, on the current state of the Red Army and the possible extent of its losses in the whole course of the counter-campaign.

Needless to say, the problems of finance and food are of great importance to the counter-campaign. We must take the possibility of a prolonged enemy campaign into account. It is necessary to make an estimate of the minimum material requirements – chiefly of the Red Army but also of the people in the revolutionary base area – for the entire struggle against the enemy's "encirclement and suppression" campaign.

With regard to politically alien elements we should not be off our guard, but neither should we be unduly apprehensive of treachery on their part and adopt excessive precautionary measures. Distinction should be made between the landlords, the merchants and the rich peasants, and the main point is to explain things to them politically and win their neutrality, while at the same time organizing the masses of the people to keep an eye on them. Only against the very few elements who are most dangerous should stern measures like arrest be taken.

The extent of success in a struggle against "encirclement and suppression" is closely related to the degree to which the tasks of the preparatory phase have been fulfilled. Relaxation of preparatory work due to underestimation of the enemy and panic due to being terrified of the enemy's attacks are harmful tendencies, and both should be resolutely opposed. What we need is an enthusiastic but calm state of mind and intense but orderly work.

Strategic retreat

A strategic retreat is a planned strategic step taken by an inferior force for the purpose of conserving its strength and biding its time to defeat the enemy, when it finds itself confronted with a superior force whose offensive it is unable to smash quickly. But military adventurists stubbornly oppose such a step and advocate "engaging the enemy outside the gates".

We all know that when two boxers fight, the clever boxer usually gives a little ground at first, while the foolish one rushes in furiously and uses up all his resources at the very start, and in the end he is often beaten by the man who has given ground.

In the novel *Shui Hu Chuan*,[5] the drill master Hung, challenging Lin Chung to a fight on Chai Chin's estate, shouts, "Come on! Come on! Come on!" In the end it is the retreating Lin Chung who spots Hung's weak point and floors him with one blow.

During the Spring and Autumn Era, when the states of Lu and Chi[6] were at war, Duke Chuang of Lu wanted to attack before the Chi troops had tired themselves out, but Tsao Kuei prevented him. When instead he adopted the tactic of "the enemy tires, we attack", he defeated the Chi army. This is a classic example from China's military history of a weak force defeating a strong force. Here is the account given by the historian Tsochiu Ming:[7]

> In the spring the Chi troops invaded us. The Duke was about to fight. Tsao Kuei requested an audience. His neighbours said, "This is the business of meat-eating officials, why meddle with it?" Tsao replied, "Meat-eaters are fools, they cannot plan ahead." So he saw the Duke. And he asked, "What will you rely on when you fight?" The Duke answered, "I never dare to keep all my food and clothing for my own enjoyment, but always share them with others." Tsao said, "Such paltry charity cannot reach all. The people will not follow you." The Duke said, "I never offer to the gods less sacrificial beasts, jade or silk than are due to them. I keep good faith." Tsao said, "Such paltry faith wins no trust. The gods will not bless you." The Duke said, "Though unable personally to attend to the details of all trials, big and small, I always demand the facts." Tsao said, "That shows your devotion to your people. You can give battle. When you do so, I beg to follow you." The Duke and he rode in the same chariot. The battle was joined at Changshuo. When the Duke was about to sound the drum for the attack, Tsao said, "Not yet." When the men of Chi had drummed thrice, Tsao said, "Now we can drum." The army of Chi was routed. The Duke wanted to pursue. Again Tsao said, "Not yet." He got down from the chariot to examine the enemy's wheel-tracks, then mounted the arm-rest of the chariot to look afar. He said, "Now we can pursue!" So began the pursuit of the Chi troops. After the victory the Duke asked Tsao why he had given such advice. Tsao replied, "A battle depends upon courage. At the first drum courage is aroused, at the second it flags, and with the third it runs out. When the enemy's courage ran out, ours was still high and so we won. It is difficult to fathom the moves of a great state, and I feared an ambush. But when I examined the enemy's wheel-tracks and found them criss-crossing and looked afar and saw his banners drooping, I advised pursuit."

That was a case of a weak state resisting a strong state. The story speaks of the political preparations before a battle – winning the confidence of the people; it speaks of a battlefield favourable for switching over to the counter-offensive – Changshuo; it indicates the favourable time for starting the counter-offensive – when the enemy's courage runs out and one's own is high; and it points to the moment for starting the pursuit – when the enemy's tracks are criss-crossed and his banners are drooping. Though the battle was not a big one, it illustrates the principles of the strategic defensive. China's military history contains numerous instances of victories won on these principles. In such famous battles as the Battle of Chengkao between the states of Chu and Han,[8] the Battle of Kunyang between the states of Hsin and Han,[9] the Battle of Kuantu

between Yuan Shao and Tsao Tsao,[10] the Battle of Chihpi between the states of Wu and Wei,[11] the Battle of Yiling between the states of Wu and Shu,[12] and the Battle of Feishui between the states of Chin and Tsin,[13] in each case the contending sides were unequal, and the weaker side, yielding some ground at first, gained mastery by striking only after the enemy had struck and so defeated the stronger side.

Our war began in the autumn of 1927, and at that time we had no experience at all. The Nanchang Uprising[14] and the Canton Uprising[15] failed, and in the Autumn Harvest Uprising[16] the Red Army in the Hunan-Hupeh-Kiangsi border area also suffered several defeats and shifted to the Chingkang Mountains on the Hunan-Kiangsi border. In the following April the units which had survived the defeat of the Nanchang Uprising also moved to the Chingkang Mountains by way of southern Hunan. By May 1928, however, basic principles of guerrilla warfare, simple in nature and suited to the conditions of the time, had already been evolved, that is, the sixteen-character formula: "The enemy advances, we retreat; the enemy camps, we harass; the enemy tires, we attack; the enemy retreats, we pursue." This sixteen-character formulation of military principles was accepted by the Central Committee before the Li Li-san line. Later our operational principles were developed a step further. At the time of our first counter-campaign against "encirclement and suppression" in the Kiangsi base area, the principle of "luring the enemy in deep" was put forward and, moreover, successfully applied. By the time the enemy's third "encirclement and suppression" campaign was defeated, a complete set of operational principles for the Red Army had taken shape. This marked a new stage in the development of our military principles, which were greatly enriched in content and underwent many changes in form, mainly in the sense that although they basically remained the same as in the sixteen-character formula, they transcended their originally simple nature. The sixteen-character formula covered the basic principles for combating "encirclement and suppression"; it covered the two stages of the strategic defensive and the strategic offensive, and within the defensive, it covered the two stages of the strategic retreat and the strategic counter-offensive. What came later was only a development of this formula.

But beginning from January 1932, after the publication of the Party's resolution entitled "Struggle for Victory First in One or More Provinces After Smashing the Third 'Encirclement and Suppression' Campaign", which contained serious errors of principle, the "Left" opportunists attacked these correct principles, finally abrogated the whole set and instituted a complete set of contrary "new principles" or "regular principles". From then on, the old principles were no longer to be considered as regular but were to be rejected as "guerrillaism". The opposition to "guerrilla-ism" reigned for three whole years. Its first stage was military adventurism, in the second it turned into military conservatism and, finally, in the third stage it became flight-ism. It was not until the Central Committee held the enlarged meeting of the Political Bureau at Tsunyi, Kweichow Province, in January 1935 that this wrong line was declared bankrupt and the correctness of the old line reaffirmed. But at what a cost!

Those comrades who vigorously opposed "guerrilla-ism" argued along the following lines. It was wrong to lure the enemy in deep because we had to abandon so much territory. Although battles had been won in this way, was not the situation different now? Moreover, was it not better to defeat the enemy without abandoning territory? And was

it not better still to defeat the enemy in his own areas, or on the borders between his areas and ours? The old practices had had nothing "regular" about them and were methods used only by guerrillas. Now our own state had been established and our Red Army had become a regular army. Our fight against Chiang Kai-shek had become a war between two states, between two great armies. History should not repeat itself, and everything pertaining to "guerrilla-ism" should be totally discarded. The new principles were "completely Marxist", while the old had been created by guerrilla units in the mountains, and there was no Marxism in the mountains. The new principles were the antithesis of the old. They were: "Pit one against ten, pit ten against a hundred, fight bravely and determinedly, and exploit victories by hot pursuit"; "Attack on all fronts"; "Seize key cities"; and "Strike with two 'fists' in two directions at the same time". When the enemy attacked, the methods of dealing with him were: "Engage the enemy outside the gates", "Gain mastery by striking first", "Don't let our pots and pans be smashed", "Don't give up an inch of territory" and "Divide the forces into six routes". The war was "the decisive battle between the road of revolution and the road of colonialism", a war of short swift thrusts, blockhouse warfare, war of attrition, "protracted war". There were, further, the policy of maintaining a great rear area and an absolutely centralized command. Finally there was a large-scale "house-moving". And anyone who did not accept these things was to be punished, labelled an opportunist, and so on and so forth.

Without a doubt these theories and practices were all wrong. They were nothing but subjectivism. Under favourable circumstances this subjectivism manifested itself in petty-bourgeois revolutionary fanaticism and impetuosity, but in times of adversity, as the situation worsened, it changed successively into desperate recklessness, conservatism and flight-ism. They were the theories and practices of hotheads and ignoramuses; they did not have the slightest flavour of Marxism about them; indeed they were anti-Marxist.

Here we shall discuss only strategic retreat, which in Kiangsi was called "luring the enemy in deep" and in Szechuan "contracting the front". No previous theorist or practitioner of war has ever denied that this is the policy a weak army fighting a strong army must adopt in the initial stage of a war. It has been said by a foreign military expert that in strategically defensive operations, decisive battles are usually avoided in the beginning, and are sought only when conditions have become favourable. That is entirely correct and we have nothing to add to it.

The object of strategic retreat is to conserve military strength and prepare for the counter-offensive. Retreat is necessary because not to retreat a step before the onset of a strong enemy inevitably means to jeopardize the preservation of one's own forces. In the past, however, many people were stubbornly opposed to retreat, considering it to be an "opportunist line of pure defence". Our history has proved that their opposition was entirely wrong.

To prepare for a counter-offensive, we must select or create conditions favourable to ourselves but unfavourable to the enemy, so as to bring about a change in the balance of forces, before we go on to the stage of the counter-offensive.

In the light of our past experience, during the stage of retreat we should in general secure at least two of the following conditions before we can consider the situation as being favourable to us and unfavourable to the enemy and before we can go over to the counter-offensive. These conditions are:

1   The population actively supports the Red Army.
2   The terrain is favourable for operations.
3   All the main forces of the Red Army are concentrated.
4   The enemy's weak spots have been discovered.
5   The enemy has been reduced to a tired and demoralized state.
6   The enemy has been induced to make mistakes.

The first condition, active support of the population, is the most important one for the Red Army. It means having a base area. Moreover, given this condition, it is easy to achieve conditions 4, 5 and 6. Therefore, when the enemy launches a full-scale offensive, the Red Army generally withdraws from the White area into the base area, because that is where the population is most active in supporting the Red Army against the White army. Also, there is a difference between the borders and the central district of a base area; in the latter the people are better at blocking the passage of information to the enemy, better at reconnaissance, transportation, joining in the fighting, and so on. Thus when we were combating the first, second and third "encirclement and suppression" campaigns in Kiangsi, all the places selected as "terminal points for the retreat" were situated where the first condition, popular support, was excellent, or rather good. This characteristic of our base areas made the Red Army's operations very different from ordinary operations and was the main reason why the enemy subsequently had to resort to the policy of blockhouse warfare.

One advantage of operating on interior lines is that it makes it possible for the retreating army to choose terrain favourable to itself and force the attacking army to fight on its terms. In order to defeat a strong army, a weak army must carefully choose favourable terrain as a battleground. But this condition alone is not enough and must be accompanied by other conditions. The first of these is popular support. The next is a vulnerable enemy, for instance, an enemy who is tired or has made mistakes, or an advancing enemy column that is comparatively poor in fighting capacity. In the absence of these conditions, even if we have found excellent terrain, we have to disregard it and continue to retreat in order to secure the desired conditions. In the White areas there is no lack of good terrain, but we do not have the favourable condition of active popular support. If other conditions are not yet fulfilled, the Red Army has no alternative but to retreat towards its base area. Distinctions such as those between the White areas and the Red areas also usually exist between the borders and the central district of a base area.

Except for local units and containing forces, all our assault troops should, on principle, be concentrated. When attacking an enemy who is on the defensive strategically, the Red Army usually disperses its own forces. Once the enemy launches a full-scale offensive, the Red Army effects a "retreat towards the centre". The terminal point chosen for the retreat is usually in the central section of the base area, but sometimes it is in the frontal or rear sections, as circumstances require. By such a retreat towards the centre all the main forces of the Red Army can be concentrated.

Another essential condition for a weak army fighting a strong one is to pick out the enemy's weaker units for attack. But at the beginning of the enemy's offensive we usually do not know which of his advancing columns is the strongest and which the second strongest, which is the weakest and which the second weakest, and so a process of

reconnaissance is required. This often takes a considerable time. That is another reason why strategic retreat is necessary.

If the attacking enemy is far more numerous and much stronger than we are, we can accomplish a change in the balance of forces only when the enemy has penetrated deeply into our base area and tasted all the bitterness it holds for him. As the chief of staff of one of Chiang Kai-shek's brigades remarked during the third "encirclement and suppression" campaign, "Our stout men have worn themselves thin and our thin men have worn themselves to death." Or, in the words of Chen Ming-shu, Commander-in-Chief of the Western Route of the Kuomintang's "Encirclement and Suppression" Army, "Everywhere the National Army gropes in the dark, while the Red Army walks in broad daylight." By then the enemy army, although still strong, is much weakened, its soldiers are tired, its morale is sagging and many of its weak spots are revealed. But the Red Army, though weak, has conserved its strength and stored up its energy, and is waiting at its ease for the fatigued enemy. At such a time it is generally possible to attain a certain parity between the two sides, or to change the enemy's absolute superiority to relative superiority and our absolute inferiority to relative inferiority, and occasionally even to become superior to the enemy. When fighting against the third "encirclement and suppression" campaign in Kiangsi, the Red Army executed a retreat to the extreme limit (to concentrate in the rear section of the base area); if it had not done so, it could not have defeated the enemy because the enemy's "encirclement and suppression" forces were then over ten times the size of the Red Army. When Sun Wu Tzu said, "Avoid the enemy when he is full of vigour, strike when he is fatigued and withdraws", he was referring to tiring and demoralizing the enemy so as to reduce his superiority.

Finally, the object of retreat is to induce the enemy to make mistakes or to detect his mistakes. One must realize that an enemy commander, however wise, cannot avoid making some mistakes over a relatively long period of time, and hence it is always possible for us to exploit the openings he leaves us. The enemy is liable to make mistakes, just as we ourselves sometimes miscalculate and give him openings to exploit. In addition, we can induce the enemy to make mistakes by our own actions, for instance, by "counterfeiting an appearance", as Sun Wu Tzu called it, that is, by making a feint to the east but attacking in the west. If we are to do this, the terminal point for the retreat cannot be rigidly limited to a definite area. Sometimes when we have retreated to the predetermined area and not yet found openings to exploit, we have to retreat farther and wait for the enemy to give us an opening.

The favourable conditions which we seek by retreating are in general those stated above. But this does not mean that a counter-offensive cannot be launched until all these conditions are present. The presence of all these conditions at the same time is neither possible nor necessary. But a weak force operating on interior lines against a strong enemy should strive to secure such conditions as are necessary in the light of the enemy's actual situation. All views to the contrary are incorrect.

The decision on the terminal point for retreat should depend on the situation as a whole. It is wrong to decide on a place which, considered in relation to only part of the situation, appears to be favourable for our passing to the counter-offensive, if it is not also advantageous from the point of view of the situation as a whole. For at the start of our counter-offensive we must take subsequent developments into consideration, and

our counter-offensives always begin on a partial scale. Sometimes the terminal point for retreat should be fixed in the frontal section of the base area, as it was during our second and fourth counter-campaigns against "encirclement and suppression" in Kiangsi and our third counter-campaign in the Shensi-Kansu area. At times it should be in the middle section of the base area, as in our first counter-campaign in Kiangsi. At other times, it should be fixed in the rear section of the base area, as in our third counter-campaign in Kiangsi. In all these cases the decision was taken by correlating the partial situation with the situation as a whole. But during the fifth counter-campaign in Kiangsi, our army gave no consideration whatsoever to retreat, because it did not take account of either the partial or the whole situation, and this was really a rash and foolhardy conduct. A situation is made up of a number of factors; in considering the relation between a part of the situation and the whole, we should base our judgements on whether the factors on the enemy's side and those on our side, as manifested in both the partial and the whole situation, are to a certain extent favourable for our starting a counter-offensive.

The terminal points for retreat in a base area can be generally divided into three types: those in the frontal section, those in the middle section, and those in the rear section of the base area. Does this, however, mean refusing to fight in the White areas altogether? No. It is only when we have to deal with a large-scale campaign of enemy "encirclement and suppression" that we refuse to fight in the White areas. It is only when there is a wide disparity between the enemy's strength and ours that, acting on the principle of conserving our strength and biding our time to defeat the enemy, we advocate retreating to the base area and luring the enemy in deep, for only by so doing can we create or find conditions favourable for our counter-offensive. If the situation is not so serious, or if it is so serious that the Red Army cannot begin its counter-offensive even in the base area, or if the counter-offensive is not going well and a further retreat is necessary to bring about a change in the situation, then we should recognize, theoretically at least, that the terminal point for the retreat may be fixed in a White area, though in the past we have had very little experience of this kind.

In general, the terminal points for retreat in a White area can also be divided into three types: (1) those in front of our base area, (2) those on the flanks of our base area, and (3) those behind our base area. Here is an example of the first type.

During our first counter-campaign against "encirclement and suppression" in Kiangsi, had it not been for the disunity inside the Red Army and the split in the local Party organization (the two difficult problems created by the Li Li-san line and the A-B Group),[17] it is conceivable that we might have concentrated our forces within the triangle formed by Kian, Nanfeng and Changshu and launched a counter-offensive. For the enemy force advancing from the area between the Kan and Fu Rivers was not very greatly superior to the Red Army in strength (100,000 against 40,000). Though the popular support there was not as active as in the base area, the terrain was favourable; moreover, it would have been possible to smash, one by one, the enemy forces advancing along separate routes.

Now for an example of the second type.

During our third counter-campaign in Kiangsi, if the enemy's offensive had not been on so large a scale, if one of the enemy's columns had advanced from Chienning, Lichuan and Taining on the Fukien-Kiangsi border, and if that column had not been too strong for us to attack, it is likewise conceivable that the Red Army might have massed its forces in the White area in western Fukien and crushed that column first, without having to make a thousand-*li* detour through Juichin to Hsingkuo.

Finally, an example of the third type.

During that same third counter-campaign in Kiangsi, if the enemy's main force had headed south instead of west, we might have been compelled to withdraw to the Huichang-Hsunwu-Anyuan area (a White area), in order to induce the enemy to move further south; the Red Army could have then driven northward into the interior of the base area, by which time the enemy force in the north of the base area would not have been very large.

The above, however, are all hypothetical examples not based on actual experience; they should be regarded as exceptional and not treated as general principles. When the enemy launches a large-scale "encirclement and suppression" campaign, our general principle is to lure him in deep, withdraw into the base area and fight him there, because this is our surest method of smashing his offensive.

Those who advocate "engaging the enemy outside the gates" oppose strategic retreat, arguing that to retreat means to lose territory, to bring harm on the people ("to let our pots and pans be smashed", as they call it), and to give rise to unfavourable repercussions outside. During our fifth counter-campaign, they argued that every time we retreated a step the enemy would push his blockhouses forward a step, so that our base areas would continuously shrink and we would have no way of recovering lost ground. Even though luring the enemy deep into our territory might have been useful in the past, it would be useless against the enemy's fifth "encirclement and suppression" campaign in which he adopted the policy of blockhouse warfare. The only way to deal with the enemy's fifth campaign, they said, was to divide up our forces for resistance and make short, swift thrusts at the enemy.

It is easy to give an answer to such views, and our history has already done so. As for loss of territory, it often happens that only by loss can loss be avoided; this is the principle of "Give in order to take". If what we lose is territory and what we gain is victory over the enemy, plus recovery and also expansion of our territory, then it is a paying proposition. In a business transaction, if a buyer does not "lose" some money, he cannot obtain goods; if a seller does not "lose" some goods, he cannot obtain money. The losses incurred in a revolutionary movement involve destruction, and what is gained is construction of a progressive character. Sleep and rest involve loss of time, but energy is gained for tomorrow's work. If any fool does not understand this and refuses to sleep, he will have no energy the next day, and that is a losing proposition. We lost out in the fifth counter-campaign for precisely such reasons. Reluctance to give up part of our territory resulted in the loss of all our territory. Abyssinia, too, lost all her territory when she fought the enemy head-on, though that was not the sole cause of her defeat.

The same holds true on the question of bringing damage on the people. If you refuse to let the pots and pans of some households be smashed over a short period of time, you will cause the smashing of the pots and pans of all the people to go on over a long period of time. If you are afraid of unfavourable short-term political repercussions, you will have to pay the price in unfavourable long-term political repercussions. After the October Revolution, if the Russian Bolsheviks had acted on the opinions of the "Left Communists" and refused to sign the peace treaty with Germany, the new-born Soviets would have been in danger of early death.[18]

Such seemingly revolutionary "Left" opinions originate from the revolutionary impetuosity of the petty-bourgeois intellectuals as well as from the narrow conservatism of the peasant small producers. People holding such opinions look at problems only one-sidedly and are unable to take a comprehensive view of the situation as a whole; they are unwilling to link the interests of today with those of tomorrow or the interests of the part with those of the whole, but cling like grim death to the partial and the temporary. Certainly, we should cling tenaciously to the partial and the temporary when, in the concrete circumstances of the time, they are favourable – and especially when they are decisive – for the whole current situation and the whole period, or otherwise we shall become advocates of letting things slide and doing nothing about them. That is why a retreat must have a terminal point. We must not go by the short-sightedness of the small producer. We should learn the wisdom of the Bolsheviks. The naked eye is not enough, we must have the aid of the telescope and the microscope. The Marxist method is the telescope and the microscope in political and military matters.

Of course, strategic retreat has its difficulties. To pick the time for beginning the retreat, to select the terminal point, to convince the cadres and the people politically – these are difficult problems demanding solution.

The problem of timing the beginning of the retreat is very important. If in the course of our first counter-campaign against "encirclement and suppression" in Kiangsi Province our retreat had not been carried out just when it was, that is, if it had been delayed, then at the very least the extent of our victory would have been affected. Both a premature and a belated retreat, of course, bring losses. But generally speaking, a belated retreat brings more losses than a premature one. A well-timed retreat, which enables us to keep the initiative entirely, is of great assistance to us in switching to the counter-offensive when, having reached the terminal point for our retreat, we have regrouped our forces and are waiting at our ease for the fatigued enemy. When smashing the enemy's first, second and fourth campaigns of "encirclement and suppression" in Kiangsi, we were able to handle the enemy confidently and without haste. It was only during the third campaign that the Red Army was very fatigued by the detour it had had to make in order to reassemble, because we had not expected the enemy to launch a new offensive so quickly after suffering such a crushing defeat in the second campaign (we ended our second counter-campaign on May 29, 1931, and Chiang Kai-shek began his third "encirclement and suppression" campaign on July 1). The timing of the retreat is decided in the same way as the timing of the preparatory phase of a counter-campaign which we discussed earlier, that is, entirely on the basis of the requisite information we have collected and of the appraisal of the general situation on the enemy side and on our own.

It is extremely difficult to convince the cadres and the people of the necessity of strategic retreat when they have had no experience of it, and when the prestige of the army leadership is not yet such that it can concentrate the authority for deciding on strategic retreat in the hands of a few persons or of a single person and at the same time enjoy the confidence of the cadres. Because the cadres lacked experience and had no faith in strategic retreat, great difficulties were encountered at the beginning of our first and fourth counter-campaigns and during the whole of the fifth. During the first counter-campaign the cadres, under the influence of the Li Li-san line, were in favour of attack and not of retreat until they were convinced otherwise. In the fourth counter-campaign the cadres, under the influence of military adventurism, objected to making preparations for retreat. In the fifth counter-campaign, they at first persisted in the military adventurist view, which opposed luring the enemy in deep, but later turned to military conservatism. Another case is that of the adherents of the Chang Kuo-tao line, who did not admit the impossibility of establishing our bases in the regions of the Tibetan and the Hui peoples,[19] until they ran up against a brick wall. Experience is essential for the cadres, and failure is indeed the mother of success. But it is also necessary to learn with an open mind from other people's experience, and it is sheer "narrow empiricism" to insist on one's own personal experience in all matters and, in its absence, to adhere stubbornly to one's own opinions and reject other people's experience. Our war has suffered in no small measure on this account.

The people's lack of faith in the need for a strategic retreat, which was due to their inexperience, was never greater than in our first counter-campaign in Kiangsi. At that time the local Party organizations and the masses of the people in the counties of Kian, Hsingkuo and Yungfeng were all opposed to the Red Army's withdrawal. But after the experience of the first counter-campaign, no such problem occurred in the subsequent ones. Everyone was temporary and was confident that the Red Army could smash the enemy's "encirclement and suppression". However, whether or not the people have faith is closely tied up with whether or not the cadres have faith, and hence the first and foremost task is to convince the cadres.

Strategic retreat is aimed solely at switching over to the counter-offensive and is merely the first stage of the strategic defensive. The decisive link in the entire strategy is whether victory can be won in the stage of the counter-offensive which follows.

Strategic counter-offensive

To defeat the offensive of an enemy who enjoys absolute superiority we rely on the situation created during the stage of our strategic retreat, a situation which is favourable to ourselves, unfavourable to the enemy and different from that at the beginning of the enemy's offensive. It takes many elements to make up such a situation. All this has been dealt with above.

However, the presence of these conditions and of a situation favourable to ourselves and unfavourable to the enemy does not yet mean that we have defeated the enemy. Such conditions and such a situation provide the possibility for our victory and the enemy's defeat, but do not constitute the reality of victory or defeat; they have not yet brought actual victory or defeat to either army. To bring about victory or defeat a

decisive battle between the two armies is necessary. Only a decisive battle can settle the question as to which army is the victor and which the vanquished. This is the sole task in the stage of strategic counter-offensive. The counter-offensive is a long process, the most fascinating, the most dynamic, and also the final stage of a defensive campaign. What is called active defence refers chiefly to this strategic counter-offensive which is in the nature of a decisive engagement.

Conditions and situation are created not only in the stage of the strategic retreat, but continue to be created in the stage of the counter-offensive. Whether in form or in nature, they are not exactly the same in the latter stage as in the former.

What could remain the same in form and in nature, for example, is the fact that the enemy troops will be even more fatigued and depleted, which is simply a continuation of their fatigue and depletion in the previous stage.

But wholly new conditions and a wholly new situation are bound to emerge. Thus, when the enemy has suffered one or more defeats, the conditions advantageous to us and disadvantageous to him will not be confined to his fatigue, etc., but a new factor will have been added, namely, that he has suffered defeats. New changes will take place in the situation, too. When the enemy begins to manoeuvre his troops in a disorderly way and to make false moves, the relative strengths of the two opposing armies will naturally no longer be the same as before.

But if it is not the enemy's forces but ours that have suffered one or more defeats, then both the conditions and the situation will change in the opposite direction. That is to say, the enemy's disadvantages will be reduced, while on our side disadvantages will make their appearance and even grow. That again will be something entirely new and different.

A defeat for either side will lead directly and speedily to a new effort by the defeated side to avert disaster, to extricate itself from the new conditions and situation unfavourable to it and favourable to the enemy and to re-create such conditions and such a situation as are favourable to it and unfavourable to its opponent, in order to bring pressure to bear on the latter.

The effort of the winning side will be exactly the opposite. It will strive to exploit its victory and inflict still greater damage on the enemy, add to the conditions that are in its favour and further improve its situation, and prevent the enemy from succeeding in extricating himself from his unfavourable conditions and situation and averting disaster.

Thus, for either side, the struggle at the stage of decisive battle is the most intense, the most complicated and the most changeful as well as the most difficult and trying in the whole war or the whole campaign; it is the most exacting time of all from the point of view of command.

In the stage of counter-offensive, there are many problems, the chief of which are the starting of the counter-offensive, the concentration of troops, mobile warfare, war of quick decision and war of annihilation.

Whether in a counter-offensive or in an offensive, the principles with regard to these problems do not differ in their basic character. In this sense we may say that a counter-offensive is an offensive.

Still, a counter-offensive is not exactly an offensive. The principles of the counter-offensive are applied when the enemy is on the offensive. The principles of the offensive

are applied when the enemy is on the defensive. In this sense, there are certain differences between a counter-offensive and an offensive.

For this reason, although the various operational problems are all included in the discussion of the counter-offensive in the present chapter on the strategic defensive, and in order to avoid repetition the chapter on the strategic offensive will deal only with other problems, yet, when it comes to actual application, we should not overlook either the similarities or the differences between the counter-offensive and the offensive.

Starting the counter-offensive

The problem of starting a counter-offensive is the problem of the "initial battle" or "prelude". Many bourgeois military experts advise caution in the initial battle, whether one is on the strategic defensive or on the strategic offensive, but more especially when on the defensive. In the past we, too, have stressed this as a serious point. Our operations against the five enemy campaigns of "encirclement and suppression" in Kiangsi Province have given us rich experience, a study of which will not be without benefit.

In his first campaign, the enemy employed about 100,000 men, divided into eight columns, to advance southward from the Kian-Chienning line against the Red Army's base area. The Red Army had about 40,000 men and was concentrated in the area of Huangpi and Hsiaopu in Ningtu County, Kiangsi Province.

The situation was as follows:

1 The "suppression" forces did not exceed 100,000 men, none of whom were Chiang Kai-shek's own troops, and the general situation was not very grave.
2 The enemy division under Lo Lin, defending Kian, was located across the Kan River to the west.
3 The three enemy divisions under Kung Ping-fan, Chang Hui-tsan and Tan Tao-yuan had advanced and occupied the Futien-Tungku-Lungkang-Yuantou sector southeast of Kian and northwest of Ningtu. The main body of Chang Hui-tsan's division was at Lungkang and that of Tan Tao-yuan's division at Yuantou. It was not advisable to select Futien and Tungku as the battleground, as the inhabitants, misled by the A-B Group, were for a time mistrustful of and opposed to the Red Army.
4 The enemy division under Liu Ho-ting was far away in Chienning in the White area of Fukien, and was unlikely to cross into Kiangsi.
5 The two enemy divisions under Mao Ping-wen and Hsu Ke-hsiang had entered the Toupi-Lokou-Tungshao sector lying between Kuangchang and Ningtu. Toupi was a White area, Lokou a guerrilla zone, and Tungshao, where there were A-B Group elements, was a place from which information was liable to leak out. Furthermore, if we were to attack Mao Ping-wen and Hsu Ke-hsiang and then drive westward, the three enemy divisions in the west under Chang Hui-tsan, Tan Tao-yuan and Kung Ping-fan might join forces, thus making it difficult for us to win victory and impossible to bring the issue to a final solution.
6 The two divisions under Chang Hui-tsan and Tan Tao-yuan, which made up the enemy's main force, were troops belonging to Lu Ti-ping, who was commander-in-chief of this "encirclement and suppression" campaign and governor of Kiangsi

Province, and Chang Hui-tsan was the field commander. To wipe out these two divisions would be practically to smash the campaign. Each of the two divisions had about fourteen thousand men and Chang's was divided between two places, so that if we attacked one division at a time we would enjoy absolute superiority.

7 The Lungkang-Yuantou sector, where the main forces of the Chang and Tan divisions were located, was close to our concentrations, and there was good popular support to cover our approach.

8 The terrain in Lungkang was good. Yuantou was not easy to attack. But were the enemy to advance to Hsiaopu to attack us, we would have good terrain there too.

9 We could mass the largest number of troops in the Lung-kang sector. In Hsingkuo, less than a hundred *li* to the southwest of Lungkang, we had an independent division of over one thousand men, which could manoeuvre in the enemy's rear.

10 If our troops made a breakthrough at the centre and breached the enemy's front, his columns to the east and west would be cut into two widely separated groups.

For the above reasons, we decided that our first battle should be against Chang Hui-tsan's main force, and we successfully hit two of his brigades and his divisional headquarters, capturing the entire force of nine thousand men and the divisional commander himself, without letting a single man or horse escape. This one victory scared Tan's division into fleeing towards Tungshao and Hsu's division into fleeing towards Toupi. Our troops then pursued Tan's division and wiped out half of it. We fought two battles in five days (December 27, 1930 to January 1, 1931), and, fearing defeat, the enemy forces in Futien, Tungku and Toupi retreated in disorder. So ended the first campaign of "encirclement and suppression".

The situation in the second "encirclement and suppression" campaign was as follows:

1 The "suppression" forces numbering 200,000 were under the command of Ho Ying-chin with headquarters at Nanchang.

2 As in the first enemy campaign, none of the forces were Chiang Kai-shek's own troops. Among them the 19th Route Army under Tsai Ting-kai, the Twenty-sixth under Sun Lien-chung and the Eighth under Chu Shao-liang were strong, or fairly strong, while all the rest were rather weak.

3 The A-B Group had been cleaned up, and the entire population of the base area supported the Red Army.

4 The Fifth Route Army under Wang Chin-yu, newly arrived from the north, was afraid of us, and, generally speaking, so were the two divisions on its left flank under Kuo Hua-tsung and Hao Meng-ling.

5 If our troops attacked Futien first and then swept across to the east, we could expand the base area to the Chienning-Lichuan-Taining sector on the Fukien-Kiangsi border and acquire supplies to help smash the next "encirclement and suppression" campaign. But if we were to thrust westward, we would come up against the Kan River and have no room for expansion after the battle. To turn east again after the battle would tire our troops and waste time.

6   Though our army (numbering over thirty thousand men) was somewhat smaller than in the first campaign, it had had four months in which to recuperate and build up energy.

For these reasons, we decided, for our first battle, to engage the forces of Wang Chin-yu and of Kung Ping-fan (totalling eleven regiments) in the Futien sector. After winning that battle we attacked Kuo Hua-tsung, Sun Lien-chung, Chu Shao-liang and Liu Ho-ting in succession. In fifteen days (from May 16 to May 30, 1931) we marched seven hundred *li*, fought five battles, captured more than twenty thousand rifles and roundly smashed the enemy's "encirclement and suppression" campaign. When fighting Wang Chin-yu, we were between the two enemy forces under Tsai Ting-kai and Kuo Hua-tsung, some ten *li* from the latter and forty *li* from the former, and some people said we were "getting into a blind alley", but we got through all the same. This was mainly due to the popular support we enjoyed in the base area and to the lack of co-ordination among the enemy units. After Kuo Hua-tsung's division was defeated, Hao Meng-ling's division fled by night back to Yungfeng, and so avoided disaster.

The situation in the third "encirclement and suppression" campaign was as follows:

1   Chiang Kai-shek personally took the field as commander-in-chief. Under him there were three subordinate commanders, each in charge of a column – the left, the right and the centre. The central column was commanded by Ho Ying-chin, who, like Chiang Kai-shek, had his headquarters in Nanchang, the right was commanded by Chen Ming-shu with headquarters at Kian, and the left by Chu Shao-liang with headquarters at Nanfeng.
2   The "suppression" forces numbered 300,000. The main forces, totalling about 100,000 men, were Chiang Kai-shek's own troops and consisted of five divisions (of nine regiments each), commanded by Chen Cheng, Lo Cho-ying, Chao Kuan-tao, Wei Li-huang and Chiang Ting-wen respectively. Besides these, there were three divisions (totalling forty thousand men) under Chiang Kuang-nai, Tsai Ting-kai and Han Teh-chin. Then there was Sun Lien-chung's army of twenty thousand. In addition, there were other, weaker forces that were likewise not Chiang's own troops.
3   The enemy's strategy in this "suppression" campaign was to "drive straight in", which was vastly different from the strategy of "consolidating at every step" he used in the second campaign. The aim was to press the Red Army back against the Kan River and annihilate it there.
4   There was an interval of only one month between the end of the second enemy campaign and the beginning of the third. The Red Army (then about thirty thousand strong) had had neither rest nor replenishments after much hard fighting and had just made a detour of a thousand *li* to concentrate at Hsingkuo in the western part of the southern Kiangsi base area, when the enemy pressed it hard from several directions.

In this situation the plan we first decided on was to move from Hsingkuo by way of Wanan, make a breakthrough at Futien, and then sweep from west to east across the

enemy's rear communication lines, thus letting the enemy's main forces make a deep but useless penetration into our base area in southern Kiangsi; this was to be the first phase of our operation. Then when the enemy turned back northward, inevitably very fatigued, we were to seize the opportunity to strike at his vulnerable units; that was to be the second phase of our operation. The heart of this plan was to avoid the enemy's main forces and strike at his weak spots. But when our forces were advancing on Futien, we were detected by the enemy, who rushed the two divisions under Chen Cheng and Lo Cho-ying to the scene. We had to change our plan and fall back to Kaohsinghsu in the western part of Hsingkuo County, which, together with its environs of less than a hundred square *li*, was then the only place for our troops to concentrate in. The day after our concentration we decided to make a thrust eastward towards Lientang in eastern Hsingkuo County, Liangtsun in southern Yungfeng County and Huangpi in northern Ningtu County. That same night, under cover of darkness, we passed through the forty-*li* gap between Chiang Ting-wen's division and the forces of Chiang Kuang-nai, Tsai Ting-kai and Han Teh-chin, and swung to Lientang. On the second day we skirmished with the forward units under Shangkuan Yun-hsiang (who was in command of Hao Meng-ling's division as well as his own). The first battle was fought on the third day with Shangkuan Yun-hsiang's division and the second battle on the fourth day with Hao Meng-ling's division; after a three-day march we reached Huangpi and fought our third battle against Mao Ping-wen's division. We won all three battles and captured over ten thousand rifles. At this point all the main enemy forces, which had been advancing westward and southward, turned eastward. Focusing on Huangpi, they converged at furious speed to seek battle and closed in on us in a major compact encirclement. We slipped through in the high mountains that lay in the twenty-*li* gap between the forces of Chiang Kuang-nai, Tsai Ting-kai and Han Teh-chin on the one side and Chen Cheng and Lo Cho-ying on the other, and thus, returning from the east to the west, reassembled within the borders of Hsingkuo County. By the time the enemy discovered this fact and began advancing west again, our forces had already had a fortnight's rest, whereas the enemy forces, hungry, exhausted and demoralized, were no good for fighting and so decided to retreat. Taking advantage of their retreat, we attacked the forces of Chiang Kuang-nai, Tsai Ting-kai, Chiang Ting-wen and Han Teh-chin, wiping out one of Chiang Ting-wen's brigades and Han Teh-chin's entire division. As for the divisions under Chiang Kuang-nai and Tsai Ting-kai, the fight resulted in a stalemate and they got away.

The situation in the fourth "encirclement and suppression" campaign was as follows. The enemy was advancing on Kuangchang in three columns; the eastern one was his main force, while the two divisions forming his western column were exposed to us and were also very close to the area where our forces were concentrated. Thus we had the opportunity to attack his western column in southern Yihuang County first, and at one stroke we annihilated the two divisions under Li Ming and Chen Shih-chi. As the enemy then sent two divisions from the eastern column to give support to his central column and advanced further, we were again able to wipe out a division in southern Yihuang County. In these two battles we captured more than ten thousand rifles and, in the main, smashed this campaign of "encirclement and suppression".

In the fifth "encirclement and suppression" campaign the enemy advanced by means of his new strategy of building blockhouses and first occupied Lichuan. But, in attempting

to recover Lichuan and engage the enemy outside the base area, we made an attack north of Lichuan at Hsiaoshih, which was an enemy strongpoint and was situated, moreover, in the White area. Failing to win the battle, we shifted our attack to Tsehsichiao, which was also an enemy strongpoint situated in the White area southeast of Hsiaoshih, and again we failed. Then in seeking battle we milled around between the enemy's main forces and his blockhouses and were reduced to complete passivity. All through our fifth counter-campaign against "encirclement and suppression", which lasted a whole year, we showed not the slightest initiative or drive. In the end we had to withdraw from our Kiangsi base area.

Our army's experience in these five counter-campaigns against "encirclement and suppression" proves that the first battle in the counter-offensive is of the greatest importance for the Red Army, which is on the defensive, if it is to smash a large and powerful enemy "suppression" force. Victory or defeat in the first battle has a tremendous effect upon the entire situation, all the way to the final engagement. Hence we arrive at the following conclusions.

First, the first battle must be won. We should strike only when positively certain that the enemy's situation, the terrain and popular support are all in our favour and not in favour of the enemy. Otherwise we should rather fall back and carefully bide our time. There will always be opportunities; we should not rashly accept battle. In our first counter-campaign we originally planned to strike at Tan Tao-yuan's troops; we advanced twice but each time had to restrain ourselves and pull back, because they would not budge from their commanding position on the Yuantou heights. A few days later we sought out Chang Hui-tsan's troops, which were more vulnerable to our attack. In our second counter-campaign our army advanced to Tungku where, for the sole purpose of waiting for Wang Chin-yu's men to leave their strongpoint at Futien, we encamped close to the enemy for twenty-five days even at the risk of leakage of information; we rejected all impatient suggestions for a quick attack and finally attained our aim. In our third counter-campaign, although the storm was breaking all around us and we had made a detour of a thousand *li*, and although the enemy had discovered our plan to outflank him we nevertheless exercised patience, turned back, changed our tactics to a breakthrough in the centre, and finally fought the first battle successfully at Lientang. In our fourth counter-campaign, after our attack on Nanfeng had failed, we unhesitatingly withdrew, wheeled round to the enemy's right flank, and reassembled our forces in the area of Tungshao, whereupon we launched our great and victorious battle in southern Yihuang County. It was only in the fifth counter-campaign that the importance of the first battle was not recognized at all. Taking alarm at the loss of the single country town of Lichuan, our forces marched north to meet the enemy in an attempt to recover it. Then, the unexpected encounter at Hsunkou, which had resulted in a victory (in which an enemy division was annihilated), was not treated as the first battle, nor were the changes that were bound to ensue foreseen, but instead Hsiaoshih was rashly attacked with no assurance of success. Thus the initiative was lost at the very first move, and that is really the worst and most stupid way to fight.

Second, the plan for the first battle must be the prelude to, and an organic part of, the plan for the whole campaign. Without a good plan for the whole campaign it is absolutely impossible to fight a really good first battle. That is to say, even though victory is

won in the first battle, if the battle harms rather than helps the campaign as a whole, such a victory can only be reckoned a defeat (as in the case of the battle of Hsunkou in the fifth campaign). Hence, before fighting the first battle one must have a general idea of how the second, third, fourth, and even the final battle will be fought, and consider what changes will ensue in the enemy's situation as a whole if we win, or lose, each of the succeeding battles. Although the result may not – and, in fact, definitely will not – turn out exactly as we expect, we must think everything out carefully and realistically in the light of the general situation on both sides. Without a grasp of the situation as a whole, it is impossible to make any really good move on the chessboard.

Third, one must also consider what will happen in the next strategic stage of the war. Whoever directs strategy will not be doing his duty if he occupies himself only with the counter-offensive and neglects the measures to be taken after it succeeds, or in case it fails. In a particular strategic stage, he should take into consideration the succeeding stages, or, at the very least, the following one. Even though future changes are difficult to foresee and the farther ahead one looks the more blurred things seem, a general calculation is possible and an appraisal of distant prospects is necessary. In war as well as in politics, planning only one step at a time as one goes along is a harmful way of directing matters. After each step, it is necessary to examine the ensuing concrete changes and to modify or develop one's strategic and operational plans accordingly, or otherwise one is liable to make the mistake of rushing straight ahead regardless of danger. However, it is absolutely essential to have a long-term plan which has been thought out in its general outline and which covers an entire strategic stage or even several strategic stages. Failure to make such a plan will lead to the mistake of hesitating and allowing oneself to be tied down, which in fact serves the enemy's strategic objects and reduces one to a passive position. It must be borne in mind that the enemy's supreme command has some strategic insight. Only when we have trained ourselves to be a head taller than the enemy will strategic victories be possible. During the enemy's fifth "encirclement and suppression" campaign, failure to do so was the main reason for the errors in strategic direction under the "Left" opportunist and the Chang Kuo-tao lines. In short, in the stage of retreat we must see ahead to the stage of the counter-offensive, in the stage of the counter-offensive we must see ahead to that of the offensive, and in the stage of the offensive we must again see ahead to a stage of retreat. Not to do so but to confine ourselves to considerations of the moment is to court defeat.

The first battle must be won. The plan for the whole campaign must be taken into account. And the strategic stage that comes next must be taken into account. These are the three principles we must never forget when we begin a counter-offensive, that is, when we fight the first battle.

Concentration of troops

The concentration of troops seems easy but is quite hard in practice. Everybody knows that the best way is to use a large force to defeat a small one, and yet many people fail to do so and on the contrary often divide their forces up. The reason is that such military leaders have no head for strategy and are confused by complicated circumstances;

hence, they are at the mercy of these circumstances, lose their initiative and have recourse to passive response.

No matter how complicated, grave and harsh the circumstances, what a military leader needs most of all is the ability to function independently in organizing and employing the forces under his command. He may often be forced into a passive position by the enemy, but the important thing is to regain the initiative quickly. Failure to do so spells defeat.

The initiative is not something imaginary but is concrete and material. Here the most important thing is to conserve and mass an armed force that is as large as possible and full of fighting spirit.

It is easy to fall into a passive position in defensive warfare, which gives far less scope for the full exercise of initiative than does offensive warfare. However, defensive warfare, which is passive in form, can be active in content, and can be switched from the stage in which it is passive in form to the stage in which it is active both in form and in content. In appearance a fully planned strategic retreat is made under compulsion, but in reality it is effected in order to conserve our strength and bide our time to defeat the enemy, to lure him in deep and prepare for our counter-offensive. On the other hand, refusal to retreat and hasty acceptance of battle (as in the battle of Hsiaoshih) may appear a serious effort to gain the initiative, while in reality it is passive. Not only is a strategic counter-offensive active in content, but in form, too, it discards the passive posture of the period of retreat. In relation to the enemy, our counter-offensive represents our effort to make him relinquish the initiative and put him in a passive position.

Concentration of troops, mobile warfare, war of quick decision and war of annihilation are all necessary conditions for the full achievement of this aim. And of these, concentration of troops is the first and most essential.

Concentration of troops is necessary for the purpose of reversing the situation as between the enemy and ourselves. First, its purpose is to reverse the situation as regards advance and retreat. Previously it was the enemy who was advancing and we who were retreating; now we seek a situation in which we advance and he retreats. When we concentrate our troops and win a battle, then in that battle we gain the above purpose, and this influences the whole campaign.

Second, its purpose is to reverse the situation with regard to attack and defence. In defensive warfare the retreat to the prescribed terminal point belongs basically to the passive, or "defence", stage. The counter-offensive belongs to the active, or "attack", stage. Although the strategic defensive retains its defensive character throughout its duration, still as compared with the retreat the counter-offensive already represents a change not only in form but in content. The counter-offensive is transitional between the strategic defensive and the strategic offensive, and in the nature of a prelude to the strategic offensive; it is precisely for the purpose of the counter-offensive that troops are concentrated.

Third, its purpose is to reverse the situation with regard to interior and exterior lines. An army operating on strategically interior lines suffers from many disadvantages, and this is especially so in the case of the Red Army, confronted as it is with "encirclement and suppression". But in campaigns and battles we can and absolutely must change this situation. We can turn a big "encirclement and suppression" campaign waged by the

enemy against us into a number of small, separate campaigns of encirclement and suppression waged by us against the enemy. We can change the converging attack directed by the enemy against us on the plane of strategy into converging attacks directed by us against the enemy on the plane of campaigns and battles. We can change the enemy's strategic superiority over us into our superiority over him in campaigns and battles. We can put the enemy who is in a strong position strategically into a weak position in campaigns and battles. At the same time we can change our own strategically weak position into a strong position in campaigns and battles. This is what we call exterior-line operations within interior-line operations, encirclement and suppression within "encirclement and suppression", blockade within blockade, the offensive within the defensive, superiority within inferiority, strength within weakness, advantage within disadvantage, and initiative within passivity. The winning of victory in the strategic defensive depends basically on this measure – concentration of troops.

In the war annals of the Chinese Red Army, this has often been an important controversial issue. In the battle of Kian on October 4, 1930, our advance and attack were begun before our forces were fully concentrated, but fortunately the enemy force (Teng Ying's division) fled of its own accord; by itself our attack was ineffective.

Beginning from 1932, there was the slogan "Attack on all fronts", which called for attacks from the base area in all directions – north, south, east and west. This is wrong not only for the strategic defensive but even for the strategic offensive. As long as there is no fundamental change in the over-all balance of forces, both strategy and tactics involve the defensive and the offensive, containing actions and assaults, and "attacks on all fronts" are in fact extremely rare. This slogan expresses the military equalitarianism which accompanies military adventurism.

In 1933 the exponents of military equalitarianism put forward the theory of "striking with two 'fists' " and splitting the main force of the Red Army in two, to seek victories simultaneously in two strategic directions. As a result, one fist remained idle while the other was tired out with fighting, and we failed to win the greatest victory possible at the time. In my opinion, when we face a powerful enemy, we should employ our army, whatever its size, in only one main direction at a time, not two. I am not objecting to operations in two or more directions, but at any given time there ought to be only one main direction. The Chinese Red Army, which entered the arena of the civil war as a small and weak force, has since repeatedly defeated its powerful antagonist and won victories that have astonished the world, and it has done so by relying largely on the employment of concentrated strength. Any one of its great victories can prove this point. When we say, "Pit one against ten, pit ten against a hundred", we are speaking of strategy, of the whole war and the over-all balance of forces, and in the strategic sense that is just what we have been doing. However, we are not speaking of campaigns and tactics, and in this sphere we must never do such a thing. Whether in counter-offensives or offensives, we should always concentrate a big force to strike at one part of the enemy forces. We suffered every time we did not concentrate our troops, as in the battles against Tan Tao-yuan in the Tungshao area of Ningtu Country in Kiangsi Province in January 1931, against the 19th Route Army in the Kaohsinghsu area of Hsingkuo County in Kiangsi in August 1931, against Chen Chi-tang in the Shuikouhsu area of Nanhsiung County in Kwangtung Province in July 1932, and against Chen Cheng in the Tuantsun

area of Lichuan County in Kiangsi in March 1934. In the past, battles such as those of Shuikouhsu and Tuantsun were generally deemed victories or even big victories (in the former we routed twenty regiments under Chen Chi-tang, in the latter twelve regiments under Chen Cheng), but we never welcomed such victories and in a certain sense even regarded them as defeats. For, in our opinion, a battle has little significance when there are no prisoners or war booty, or when they do not outweigh the losses. Our strategy is "pit one against ten" and our tactics are "pit ten against one" – this is one of our fundamental principles for gaining mastery over the enemy.

Military equalitarianism reached its extreme point in our fifth counter-campaign against "encirclement and suppression" in 1934. It was thought that we could beat the enemy by "dividing the forces into six routes" and "resisting on all fronts", but instead we were beaten by the enemy, and the reason was fear of losing territory. Naturally one can scarcely avoid loss of territory when concentrating the main forces in one direction while leaving only containing forces in others. But this loss is temporary and partial and is compensated for by victory in the place where the assault is made. After such a victory is won, territory lost in the area of the containing forces can be recovered. The enemy's first, second, third and fourth campaigns of "encirclement and suppression" all entailed the loss of territory – particularly the third campaign, in which the Kiangsi base area of the Red Army was almost completely lost – but in the end we not only recovered but extended our territory.

Failure to appreciate the strength of the people in the base area has often given rise to unwarranted fear of moving the Red Army too far away from the base area. This happened when the Red Army in Kiangsi made a long drive to attack Changchow in Fukien Province in 1932, and also when it wheeled around to attack Fukien after the victory in our fourth counter-campaign in 1933. There was fear in the first case that the enemy would seize the entire base area, and in the second case that he would seize part of it; consequently there was opposition to concentrating the forces and advocacy of dividing them up for defence, but in the end all this proved to be wrong. As far as the enemy is concerned, he is afraid to advance into our base area, but the main danger in his eyes is a Red Army that has driven into the White area. His attention is always fixed on the whereabouts of the main force of the Red Army, and he rarely takes his eyes off it to concentrate on the base area. Even when the Red Army is on the defensive, it is still the centre of the enemy's attention. Part of his over-all plan is to reduce the size of our base area, but if the Red Army concentrates its main force to annihilate one of his columns, the enemy's supreme command will be compelled to focus greater attention on the Red Army and concentrate larger forces against it. Hence it is possible to wreck an enemy plan for reducing the size of a base area.

Also, it was wrong to say, "In the fifth 'encirclement and suppression' campaign which is being carried on by means of blockhouse warfare, it is impossible for us to operate with concentrated forces, and all we can do is to divide them up for defence and for short, swift thrusts." The enemy's tactics of pushing forward 3, 5, 8, or 10 *li* at a time and building blockhouses at each halt were entirely the result of the Red Army's practice of fighting defensive actions at every successive point. The situation would certainly have been different if our army had abandoned the tactics of point-by-point defence on interior lines and, when possible and necessary, had turned and driven into the enemy's

interior lines. The principle of concentration of forces is precisely the means for defeating the enemy's blockhouse warfare.

The kind of concentration of forces we advocate does not mean the abandonment of people's guerrilla warfare. To abandon small-scale guerrilla warfare and "concentrate every single rifle in the Red Army", as advocated by the Li Li-san line, has long since been proved wrong. Considering the revolutionary war as a whole, the operations of the people's guerrillas and those of the main forces of the Red Army complement each other like a man's right arm and left arm; and if we had only the main forces of the Red Army without the people's guerrillas, we would be like a warrior with only one arm. In concrete terms, and especially with regard to military operations, when we talk of the people in the base area as a factor, we mean that we have an armed people. That is the main reason why the enemy is afraid to approach our base area.

It is also necessary to employ Red Army detachments for operations in secondary directions; not all the forces of the Red Army should be concentrated. The kind of concentration we advocate is based on the principle of guaranteeing absolute or relative superiority on the battlefield. To cope with a strong enemy or to fight on a battlefield of vital importance, we must have an absolutely superior force; for instance, a force of forty thousand was concentrated to fight the nine thousand men under Chang Hui-tsan on December 30, 1930, in the first battle of our first counter-campaign. To cope with a weaker enemy or to fight on a battlefield of no great importance, a relatively superior force is sufficient; for instance, only some ten thousand Red Army men were employed to fight Liu Ho-ting's division of seven thousand men in Chienning on May 29, 1931, in the last battle of our second counter-campaign.

That is not to say we must have numerical superiority on every occasion. In certain circumstances, we may go into battle with a relatively or absolutely inferior force. Take the case of going into battle with a relatively inferior force when we have only a rather small Red Army force in a certain area (it is not that we have more troops and have not concentrated them). Then, in order to smash the attack of the stronger enemy in conditions where popular support, terrain and weather are greatly in our favour, it is of course necessary to concentrate the main part of our Red Army force for a surprise attack on a segment of one flank of the enemy while containing his centre and his other flank with guerrillas or small detachments, and in this way victory can be won. In our surprise attack on that segment of the enemy flank, the principle of using a superior force against an inferior force, of using the many to defeat the few, still applies. The same principle also applies when we go into battle with an absolutely inferior force, for example, when a guerrilla force makes a surprise attack on a large White army force, but is attacking only a small part of it.

As for the argument that the concentration of a large force for action in a single battle area is subject to the limitations of terrain, roads, supplies and billeting facilities, it should be evaluated according to the circumstances. There is a difference in the degree to which these limitations affect the Red Army and the White army, as the Red Army can stand greater hardships than the White army.

We use the few to defeat the many – this we say to the rulers of China as a whole. We use the many to defeat the few – this we say to each separate enemy force on the battlefield. That is no longer a secret, and in general the enemy is by now well acquainted with

our way. However, he can neither prevent our victories nor avoid his own losses, because he does not know when and where we shall act. This we keep secret. The Red Army generally operates by surprise attacks.

Mobile warfare

Mobile warfare or positional warfare? Our answer is mobile warfare. So long as we lack a large army or reserves of ammunition, and so long as there is only a single Red Army force to do the fighting in each base area, positional warfare is generally useless to us. For us, positional warfare is generally inapplicable in attack as well as in defence.

One of the outstanding characteristics of the Red Army's operations, which follows from the fact that the enemy is powerful while the Red Army is deficient in technical equipment, is the absence of fixed battle lines.

The Red Army's battle lines are determined by the direction in which it is operating. As its operational direction often shifts, its battle lines are fluid. Though the main direction does not change in a given period of time, within its ambit the secondary directions may shift at any moment; when we find ourselves checked in one direction, we must turn to another. If, after a time, we find ourselves checked in the main direction too, then we must change even the main direction.

In a revolutionary civil war, there cannot be fixed battle lines, which was also the case in the Soviet Union. The difference between the Soviet Army and ours is that its battle lines were not so fluid as ours. There cannot be absolutely fixed battle lines in any war, because the vicissitudes of victory and defeat, advance and retreat, preclude it. But relatively fixed battle lines are often to be found in the general run of wars. Exceptions occur only where an army faces a much stronger enemy, as is the case with the Chinese Red Army in its present stage.

Fluidity of battle lines leads to fluidity in the size of our base areas. Our base areas are constantly expanding and contracting, and often as one base area falls another rises. This fluidity of territory is entirely a result of the fluidity of the war.

Fluidity in the war and in our territory produces fluidity in all fields of construction in our base areas. Construction plans covering several years are out of the question. Frequent changes of plan are all in the day's work.

It is to our advantage to recognize this characteristic. We must base our planning on this characteristic and must not have illusions about a war of advance without any retreats, take alarm at any temporary fluidity of our territory or of the rear areas of our army, or endeavour to draw up detailed long-term plans. We must adapt our thinking and our work to the circumstances, be ready to sit down as well as to march on, and always have our marching rations handy. It is only by exerting ourselves in today's fluid way of life that we can secure relative stability tomorrow, and then full stability.

The exponents of the strategy of "regular warfare" which dominated our fifth counter-campaign denied this fluidity and opposed what they called "guerrilla-ism". Those comrades, who opposed fluidity, managed affairs as though they were the rulers of a big state, and the result was an extraordinary and immense fluidity – the 25,000-*li* Long March.

Our workers' and peasants' democratic republic is a state, but today it is not yet a full-fledged one. Today we are still in the period of strategic defensive in the civil war, the form of our political power is still far from that of a full-fledged state, our army is still much inferior to the enemy both in numbers and technical equipment, our territory is still very small, and our enemy is constantly out to destroy us and will never rest content till he has done so. In defining our policy on the basis of these facts, we should not repudiate guerrilla-ism in general terms but should honestly admit the guerrilla character of the Red Army. It is no use being ashamed of this. On the contrary, this guerrilla character is precisely our distinguishing feature, our strong point, and our means of defeating the enemy. We should be prepared to discard it, but we cannot do so today. In the future this guerrilla character would definitely become something to be ashamed of and to be discarded, but today it is invaluable and we must stick to it.

"Fight when you can win, move away when you can't win" – this is the popular way of describing our mobile warfare today. There is no military expert anywhere in the world who approves only of fighting and never of moving, though few people do as much moving as we do. We generally spend more time in moving than in fighting and would be doing well if we fought an average of one sizable battle a month. All our "moving" is for the purpose of "fighting", and all our strategy and tactics are built on "fighting". Nevertheless, there are times when it is inadvisable for us to fight. In the first place, it is inadvisable to fight when the force confronting us is too large; second, it is sometimes inadvisable to fight when the force confronting us, though not so large, is very close to other enemy forces; third, it is generally inadvisable to fight an enemy force that is not isolated and is strongly entrenched; fourth, it is inadvisable to continue an engagement in which there is no prospect of victory. In any one of these situations we are prepared to move away. Such moving away is both permissible and necessary. For our recognition of the necessity of moving away is based on our recognition of the necessity of fighting. Herein lies the fundamental characteristic of the Red Army's mobile warfare.

Mobile warfare is primary, but we do not reject positional warfare where it is possible and necessary. It should be admitted that positional warfare should be employed for the tenacious defence of particular key points in a containing action during the strategic defensive, and when, during the strategic offensive, we encounter an enemy force that is isolated and cut off from help. We have had considerable experience in defeating the enemy by such positional warfare; we have cracked open many enemy cities, block-houses and forts and broken through fairly well-fortified enemy field positions. In future we shall increase our efforts and remedy our inadequacies in this respect. We should by all means advocate positional attack or defence when circumstances require and permit it. At the present time, what we are opposed to is the general use of positional warfare or putting it on an equal footing with mobile warfare; that is impermissible.

During the ten years' civil war, have there been no changes whatsoever in the guerrilla character of the Red Army, its lack of fixed battle lines, the fluidity of its base areas, or the fluidity of construction work in its base areas? Yes, there have been changes. The period from the days in the Chingkang Mountains to our first counter-campaign against "encirclement and suppression" in Kiangsi was the first stage, the stage in which the guerrilla character and fluidity were very pronounced, the Red Army being in its infancy and the base areas still guerrilla zones. In the second stage, which comprised the period

from the first to the third counter-campaign, both the guerrilla character and the fluidity were considerably reduced, front armies having been formed, and base areas with a population of several millions established. In the third stage, which comprised the period from the end of the third to the fifth counter-campaign, the guerrilla character and the fluidity were further reduced, and a central government and a revolutionary military commission had already been set up. The fourth stage was the Long March. The mistaken rejection of guerrilla warfare and fluidity on a small scale had led to guerrilla warfare and fluidity on a great scale. Now we are in the fifth stage. Because of our failure to smash the fifth "encirclement and suppression" campaign and because of this great fluidity, the Red Army and the base areas have been greatly reduced, but we have planted our feet in the Northwest and consolidated and developed our base area here, the Shensi-Kansu-Ningsia Border Region. The three front armies which form the main forces of the Red Army have been brought under a unified command, which is unprecedented.

Going by the nature of our strategy, we may also say the period from the days in the Chingkang Mountains to our fourth counter-campaign was one stage, the period of the fifth counter-campaign was another stage, and the period from the Long March to the present is the third. During the fifth counter-campaign the correct policy of the past was wrongly discarded; today we have correctly discarded the wrong policy adopted during the fifth counter-campaign and revived the earlier and correct policy. However, we have not thrown out everything in the fifth counter-campaign, nor revived everything that preceded it. We have revived only what was good in the past, and discarded only the mistakes of the period of the fifth counter-campaign.

Guerrilla-ism has two aspects. One is irregularity, that is, decentralization, lack of uniformity, absence of strict discipline, and simple methods of work. These features stemmed from the Red Army's infancy, and some of them were just what was needed at the time. As the Red Army reaches a higher stage, we must gradually and consciously eliminate them so as to make the Red Army more centralized, more unified, more disciplined and more thorough in its work – in short, more regular in character. In the directing of operations we should also gradually and consciously reduce such guerrilla characteristics as are no longer required at a higher stage. Refusal to make progress in this respect and obstinate adherence to the old stage are impermissible and harmful, and are detrimental to large-scale operations.

The other aspect of guerrilla-ism consists of the principle of mobile warfare, the guerrilla character of both strategic and tactical operations which is still necessary at present, the inevitable fluidity of our base areas, flexibility in planning the development of the base areas, and the rejection of premature regularization in building the Red Army. In this connection, it is equally impermissible, disadvantageous and harmful to our present operations to deny the facts of history, oppose the retention of what is useful, and rashly leave the present stage in order to rush blindly towards a "new stage", which is as yet beyond reach and has no real significance at the present time.

We are now on the eve of a new stage with respect to the Red Army's technical equipment and organization. We must be prepared to go over to the new stage. Not to prepare ourselves would be wrong and harmful to our future warfare. In the future, when the technical and organizational conditions in the Red Army have changed and the building

of the Red Army has entered a new stage, its operational directions and battle lines will become more stable; there will be more positional warfare; the fluidity of the war, of our territory and of our construction work will be greatly reduced and finally disappear; and we will no longer be handicapped by present limitations, such as the enemy's superiority and his strongly entrenched positions.

At present we oppose the wrong measures of the period of the domination of "Left" opportunism and, at the same time, the revival of many of the irregular features which the Red Army had in its infancy but which are now unnecessary. But we should be resolute in restoring the many valuable principles of army building and of strategy and tactics by which the Red Army has consistently won its victories. We must sum up all that is good from the past in a systematic, more highly developed and richer military line, in order to win victories over the enemy today and prepare to go over to the new stage in the future.

The waging of mobile warfare involves many problems, such as reconnaissance, judgement, decision, combat disposition, command, concealment, concentration, advance, deployment, attack, pursuit, surprise attack, positional attack, positional defence, encounter action, retreat, night fighting, special operations, evading the strong and attacking the weak, besieging the enemy in order to strike at his reinforcements, feint attack, defence against aircraft, operating amongst several enemy forces, by-passing operations, consecutive operations, operating without a rear, the need for rest and building up energy. These problems exhibited many specific features in the history of the Red Army, features which should be methodically dealt with and summed up in the science of campaigns, and I shall not go into them here.

War of quick decision

A strategically protracted war and campaigns or battles of quick decision are two aspects of the same thing, two principles which should receive equal and simultaneous emphasis in civil wars and which are also applicable in anti-imperialist wars.

Revolutionary forces grow only gradually because the reactionary forces are very strong, and this fact determines the protracted nature of our war. Here impatience is harmful and advocacy of "quick decision" incorrect. To wage a revolutionary war for ten years, as we have done, might be surprising in other countries, but for us it is like the opening sections in an "eight-legged essay" – the "presentation, amplification and preliminary exposition of the theme"[20] – and many exciting parts are yet to follow. No doubt developments in the future will be greatly accelerated under the influence of domestic and international conditions. As changes have already taken place in the international and domestic situation and greater changes are coming, it can be said that we have outgrown the past state of slow development and fighting in isolation. But we should not expect successes overnight. The aspiration to "wipe out the enemy before breakfast" is admirable, but it is bad to make concrete plans to do so. As China's reactionary forces are backed by many imperialist powers, our revolutionary war will continue to be a protracted one until China's revolutionary forces have built up enough strength to breach the main positions of our internal and external enemies, and until the international revolutionary forces have crushed or contained most of the international

reactionary forces. To proceed from this point in formulating our strategy of long-term warfare is one of the important principles guiding our strategy.

The reverse is true of campaigns and battles – here the principle is not protractedness but quick decision. Quick decision is sought in campaigns and battles, and this is true at all times and in all countries. In a war as a whole, too, quick decision is sought at all times and in all countries, and a long drawn-out war is considered harmful. China's war, however, must be handled with the greatest patience and treated as a protracted war. During the period of the Li Li-san line, some people ridiculed our way of doing things as "shadow-boxing tactics" (meaning our tactics of fighting many battles back and forth before going on to seize the big cities), and said that we would not see the victory of the revolution until our hair turned white. Such impatience was proved wrong long ago. But if their criticism had been applied not to strategy but to campaigns and battles, they would have been perfectly right, and for the following reasons. First, the Red Army has no sources from which to replenish its arms and especially its ammunition; second, the White forces consist of many armies while there is only one Red Army, which must be prepared to fight one operation after another in quick succession in order to smash each campaign of "encirclement and suppression"; and third, though the White armies advance separately, most of them keep fairly close to one another, and if we fail to gain a quick decision in attacking one of them, all the others will converge upon us. For these reasons we have to fight battles of quick decision. It is usual for us to conclude a battle in a few hours, or in a day or two. It is only when our plan is to "besiege the enemy in order to strike at his reinforcements" and our purpose is to strike not at the besieged enemy but at his reinforcements that we are prepared for a certain degree of protractedness in our besieging operations; but even then we seek a quick decision against the reinforcements. A plan of protracted operations is often applied in campaigns or battles when we are strategically on the defensive and are tenaciously defending positions on a holding front, or when, in a strategic offensive, we are attacking isolated enemy forces cut off from help, or are eliminating White strongholds within our base areas. But protracted operations of this kind help rather than hinder the main Red Army force in its battles of quick decision.

A quick decision cannot be achieved simply by wanting it, but requires many specific conditions. The main requirements are: adequate preparations, seizing the opportune moment, concentration of superior forces, encircling and outflanking tactics, favourable terrain, and striking at the enemy when he is on the move, or when he is stationary but has not yet consolidated his positions. Unless these requirements are satisfied, it is impossible to achieve quick decision in a campaign or battle.

The smashing of an enemy "encirclement and suppression" is a major campaign, but the principle of quick decision and not that of protractedness still applies. For the manpower, financial resources and military strength of a base area do not allow protractedness.

While quick decision is the general principle, we must oppose undue impatience. It is altogether necessary that the highest military and political leading body of a revolutionary base area, having taken into account the circumstances in its base area and the situation of the enemy, should not be overawed by the enemy's truculence, dispirited by hardships that can be endured, or dejected by setbacks, but should have the requisite

patience and stamina. The smashing of the first enemy "encirclement and suppression" campaign in Kiangsi Province took only one week from the first battle to the last; the second was smashed in barely a fortnight; the third dragged on for three months before it was smashed; the fourth took three weeks; and the fifth taxed our endurance for a whole year. When we were compelled to break through the enemy's encirclement after the failure to smash his fifth campaign, we showed an unjustifiable haste. In the circumstances then obtaining, we could well have held out for another two or three months, giving the troops some time for rest and reorganization. If that had been done, and if the leadership had been a little wiser after our breakthrough, the outcome would have been very different.

For all that, the principle of shortening the duration of a campaign by every possible means remains valid. Campaign and battle plans should call for our maximum effort in concentration of troops, mobile warfare, and so on, so as to ensure the destruction of the enemy's effective strength on the interior lines (that is, in the base area) and the quick defeat of his "encirclement and suppression" campaign, but where it is evident that the campaign cannot be terminated on our interior lines, we should employ the main Red Army force to break through the enemy's encirclement and switch to our exterior lines (that is, the enemy's interior lines) in order to defeat him there. Now that the enemy has developed his blockhouse warfare to a high degree, this will become our usual method of operation. At the time of the Fukien Incident,[21] two months after the commencement of our fifth counter-campaign, the main forces of the Red Army should undoubtedly have thrust into the Kiangsu-Chekiang-Anhwei-Kiangsi region, with Chekiang as the centre, and swept over the length and breadth of the area between Hangchow, Soochow, Nanking, Wuhu, Nanchang and Foochow, turning our strategic defensive into a strategic offensive, menacing the enemy's vital centres and seeking battles in the vast areas where there were no blockhouses. By such means we could have compelled the enemy, who was attacking southern Kiangsi and western Fukien, to turn back to defend his vital centres, broken his attack on the base area in Kiangsi and rendered aid to the People's Government in Fukien – we certainly could have aided it by this means. As this plan was rejected, the enemy's fifth "encirclement and suppression" campaign could not be broken, and the People's Government in Fukien inevitably collapsed. Even after a year's fighting, though it had become inopportune for us to advance on Chekiang, we could still have turned to the strategic offensive in another direction by moving our main forces towards Hunan, that is, by driving into central Hunan instead of going through Hunan to Kweichow, and in this way we could have manoeuvred the enemy from Kiangsi into Hunan and destroyed him there. As this plan, too, was rejected, all hope of breaking the enemy's fifth campaign was finally dashed, and we had no alternative but to set out on the Long March.

War of annihilation

It is inappropriate to advocate a "contest of attrition" for the Chinese Red Army today. A "contest of treasures" not between Dragon Kings but between a Dragon King and a beggar would be rather ludicrous. For the Red Army which gets almost all its supplies from the enemy, war of annihilation is the basic policy. Only by annihilating the enemy's

effective strength can we smash his "encirclement and suppression" campaigns and expand our revolutionary base areas. Inflicting casualties is a means of annihilating the enemy, or otherwise there would be no sense to it. We incur losses ourselves in inflicting casualties on the enemy but we replenish ourselves by annihilating his units, thereby not only making good our losses but adding to the strength of our army. A battle in which the enemy is routed is not basically decisive in a contest with an enemy of great strength. A battle of annihilation, on the other hand, produces a great and immediate impact on any enemy. Injuring all of a man's ten fingers is not as effective as chopping off one, and routing ten enemy divisions is not as effective as annihilating one of them.

Our policy for dealing with the enemy's first, second, third and fourth "encirclement and suppression" campaigns was war of annihilation. The forces annihilated in each campaign constituted only part of the enemy's total strength, and yet all these "encirclement and suppression" campaigns were smashed. In our fifth counter-campaign, however, the opposite policy was pursued, which in fact helped the enemy to attain his aims.

War of annihilation entails the concentration of superior forces and the adoption of encircling or outflanking tactics. We cannot have the former without the latter. Conditions such as popular support, favourable terrain, a vulnerable enemy force and the advantage of surprise are all indispensable for the purpose of annihilation.

Merely routing one enemy force or permitting it to escape has meaning only if, in the battle or campaign as a whole, our main force is concentrating its operations of annihilation against another enemy force, or otherwise it is meaningless. Here the losses are justified by the gains.

In establishing our own war industry we must not allow ourselves to become dependent on it. Our basic policy is to rely on the war industries of the imperialist countries and of our domestic enemy. We have a claim on the output of the arsenals of London as well as of Hanyang, and, what is more, it is delivered to us by the enemy's transport corps. This is the sober truth, it is not a jest.

Notes

1 "Bandit ways" refers to plundering and looting resulting from lack of discipline, organization and clear political direction.
2 On October 30, 1927 the peasants of Haifeng and Lufeng in Kwangtung Province launched their third insurrection under the leadership of the Communist Party of China. They occupied Haifeng and Lufeng and the surrounding area, organized a Red Army and established the democratic political power of the workers and peasants. They were later defeated because they made the mistake of underestimating the enemy.
3 The Fourth Front Army and the Second Front Army of the Red Army joined forces in the autumn of 1936 and shifted northward from the northeastern part of Sikang. Chang Kuo-tao was then still persisting in his anti-Party stand and in his policy of retreat and liquidation which he had hitherto pursued. In October of the same year, when the Second and Fourth Front Armies arrived in Kansu, Chang Kuo-tao ordered the advance units of the Fourth Front Army, numbering more than 20,000, to organize the Western Column for crossing the Yellow River and advancing westward to Chinghai. The Western Column was practically defeated after suffering blows in battles in December 1936 and was completely defeated in March 1937.
4 See letter from Marx to Kugelmann on the Paris Commune.
5 *Shui Hu Chuan* is a celebrated Chinese novel describing a peasant war. The novel is attributed to Shih Nai-an who lived around the end of the Yuan Dynasty and the beginning of the Ming Dynasty

(fourteenth century A.D.). Lin Chung and Chai Chin are both heroes in this novel. Hung is the drill master on Chai Chin's estate.

6 Lu and Chi were two feudal states in the Spring and Autumn Era (722–481 B.C.). Chi was a big state in the central part of the present Shantung Province, and Lu was a smaller one in the southern part. Duke Chuang reigned over Lu from 693 to 662 B.C.

7 Tsochiu Ming was the author of *Tso Chuan*, a classical chronicle of the Chou Dynasty. For the passage quoted, see the section in *Tso Chuan* entitled "The 10th Year of Duke Chuang" (684 B.C.).

8 The ancient town of Chengkao, in the northwest of the present Chengkao County, Honan Province, was of great military importance. It was the scene of battles fought in 203 B.C. between Liu Pang, King of Han, and Hsiang Yu, King of Chu. At first Hsiang Yu captured Yunyang and Chengkao and Liu Pang's troops were almost routed. Liu Pang waited until the opportune moment when Hsiang Yu's troops were in midstream crossing the Chishui River, and then crushed them and recaptured Chengkao.

9 The ancient town of Kunyang, in the north of the present Yehhsien County, Honan Province, was the place where Liu Hsiu, founder of the Eastern Han Dynasty, defeated the troops of Wang Mang, Emperor of the Hsin Dynasty, in 23 B.C. There was a huge numerical disparity between the two sides, Liu Hsiu's forces totalling 8,000 to 9,000 men as against Wang Mang's 400,000. But taking advantage of the negligence of Wang Mang's generals, Wang Shun and Wang Yu, who underestimated the enemy, Liu Hsiu with only three thousand picked troops put Wang Mang's main forces to rout. He followed up this victory by crushing the rest of the enemy troops.

10 Kuantu was in the northeast of the present Chungmou County, Honan Province and the scene of the battle between the armies of Tsao Tsao and Yuan Shao in A.D. 200. Yuan Shao had an army of 100,000, while Tsao Tsao had only a meagre force and was short of supplies. Taking advantage of lack of vigilance on the part of Yuan Shao's troops, who belittled the enemy, Tsao Tsao dispatched his light-footed soldiers to spring a surprise attack on them and set their supplies on fire. Yuan Shao's army was thrown into confusion and its main force wiped out.

11 The state of Wu was ruled by Sun Chuan, and the state of Wei by Tsao Tsao. Chihpi is situated on the south bank of the Yangtse River, to the northeast of Chiayu, Hupeh Province. In A.D. 208 Tsao Tsao led an army of over 500,000 men, which he proclaimed to be 800,000 strong, to launch an attack on Sun Chuan. The latter, in alliance with Tsao Tsao's antagonist Liu Pei, mustered a force of 30,000. Knowing that Tsao Tsao's army was plagued by epidemics and was unaccustomed to action afloat, the allied forces of Sun Chuan and Liu Pei set fire to Tsao Tsao's fleet and crushed his army.

12 Yiling, to the east of the present Ichang, Hupeh Province, was the place where Lu Sun, a general of the state of Wu, defeated the army of Liu Pei, ruler of Shu, in A.D. 222. Liu Pei's troops scored successive victories at the beginning of the war and penetrated five or six hundred *li* into the territory of Wu as far as Yiling. Lu Sun, who was defending Yiling, avoided battle for over seven months until Liu Pei "was at his wits' end and his troops were exhausted and demoralized". Then he crushed Liu Pei's troops by taking advantage of a favourable wind to set fire to their tents.

13 Hsieh Hsuan, a general of Eastern Tsin Dynasty, defeated Fu Chien, ruler of the stage of Chin, in A.D. 383 at the Feishui River in Anhwei Province. Fu Chien had an infantry force of more than 600,000, a cavalry force of 270,000 and a guards corps of more than 30,000, while the land and river forces of Eastern Tsin numbered only 80,000. When the armies lined up on opposite banks of the Feishui River, Hsieh Hsuan, taking advantage of the overconfidence and conceit of the enemy troops, requested Fu Chien to move his troops back so as to leave room for the Eastern Tsin troops to cross the river and fight it out. Fu Chien complied, but when he ordered withdrawal, his troops got into a panic and could not be stopped. Seizing the opportunity, the Eastern Tsin troops crossed the river, launched an offensive and crushed the enemy.

14 Nanchang, capital of Kiangsi Province, was the scene of the famous uprising on August 1, 1927 led by the Communist Party of China in order to combat the counter-revolution of Chiang Kai-shek and Wang Ching-wei and to continue the revolution of 1924–27. More than thirty thousand troops took part in the uprising which was led by Comrades Chou En-lai, Chu Teh, Ho Lung and Yeh Ting. The insurrectionary army withdrew from Nanchang on August 5 as planned, but suffered a defeat when approaching Chaochow and Swatow in Kwangtung Province. Led by Comrades Chu Teh, Chen Yi and Lin Piao, part of the troops later fought their way to the Chingkang Mountains

and joined forces with the First Division of the First Workers' and Peasants' Revolutionary Army under Comrade Mao Tse Tung.

15 See "Why Is It That Red Political Power Can Exist in China?", Note 8, pp. 17–18, from *The Selected Works of Mao Tse Tung*.

16 The famous Autumn Harvest Uprising under the leadership of Comrade Mao Tse Tung was launched in September 1927 by the people's armed forces of Hsiushui, Pinghsiang, Pingkiang and Liuyang Counties on the Hunan-Kiangsi border, who formed the First Division of the First Workers' and Peasants' Revolutionary Army. Comrade Mao Tse Tung led this force to the Chingkang Mountains where a revolutionary base was established.

17 The A-B (initials for "Anti-Bolshevik") Group was a counter-revolutionary organization of undercover Kuomintang agents in the Red areas.

18 See V.I. Lenin, *Selected Works* (two-volume English ed.), Vol. II. Moscow, 1947, "Theses on the Question of the Immediate Conclusion of a Separate and Annexationist Peace", "Strange and Monstrous", "A Serious Lesson and a Serious Responsibility", "Report on War and Peace" and also *History of the Communist Party of the Soviet Union (Bolsheviks), Short Course*, Chapter 7, Sector 7.

19 The regions referred to here are those inhabited by the Tibetans in Sikang and the Hui people in Kansu, Chinghai and Sinkiang Provinces.

20 The "eight-legged essay" was the prescribed form in the imperial competitive examinations in feudal China from the fifteenth to the nineteenth century. The main body of the essay was made up of the inceptive paragraph, the middle paragraph, the rear paragraph and the concluding paragraph, with each paragraph comprising two parts. Here, Comrade Mao Tse Tung is using the development of the theme in this kind of essay as a metaphor to illustrate the development of the revolution through its various stages. However, Comrade Mao Tse Tung generally uses the term "eight-legged essay!" to ridicule dogmatism.

21 In November 1933, under the influence of the anti-Japanese upsurge of the people throughout China, the leaders of the Kuomintang's 19th Route Army, in alliance with the Kuomintang forces under Li Chi-shen, publicly renounced Chiang Kai-shek and established the "People's Revolutionary Government of the Republic of China" in Fukien, concluding an agreement with the Red Army to attack Chiang Kai-shek and resist Japan. This episode was referred to as the Fukien Incident. The 19th Route Army and the People's Government of Fukien, however, collapsed under the attacks of Chiang Kai-shek's troops.

17 Strategic terrorism

The framework and its fallacies

Peter R. Neumann and M.L.R. Smith

Introduction

Since September 11, 2001, no issue has generated more public interest than terrorism. At the internet bookseller, Amazon, 20,000 books on the topic are currently available, ranging from survival guides to complex post-modernist analyses.[1] Among this flood of (often forgettable) books, what stands out is the absence of any meaningful examination of terrorism as a military strategy. This seems odd given that the restructuring of entire armies is based on the assumption that the 'new battles' of the twenty-first century are not going to be fought with tanks and missiles, but 'by customs officers stopping suspicious persons at our borders and diplomats securing cooperation against money laundering'.[2] Of course, there are many good reasons for this reluctance to engage with terrorism as a strategy. After all, we are constantly told that the so-called 'new terrorism' is nihilist and irrational, and that attempting to understand its logic would be futile.[3] Furthermore, there can be no doubt that many among the older generation of strategists feel more comfortable dealing with the supposedly purposeful behavior of states, and have therefore focused on the state's response rather than on the phenomenon itself.[4]

In our view, the gap in the scholarly literature must be addressed urgently because the lack of a theoretical framework in which to understand terrorism leads to questionable assertions about its practice.[5] There is a tendency to treat terrorism as an aberrant form of violent activity devoid of any meaning. For example, Bruce Cumings declared in the wake of September 11 that:

> . . . in its utter recklessness and indifference to consequences, its craven anonymity, and its lack of any discernible 'program' save for inchoate revenge, this was an apolitical act. The 9/11 attack had no rational military purpose [because] they lacked the essential relationship between violent means and political ends that, as Clausewitz taught us, must govern any act of war.[6]

Elsewhere, terrorism is viewed through the prism of an ideological showdown between the forces of good and evil. This is most graphically embodied in the notion of the 'war against terrorism'. Other commentators, meanwhile, see terrorism as a matter that is essentially the product of relative deprivation. Stella Rimington, the former head of MI5, the British security service, stated that 'Terrorism is going to be there for a long

time. It's going to be there as long as there are people with grievances that they feel terrorism will help solve.'[7]

It is our contention that terrorism – even that of the supposedly 'nihilist' variety – does not necessarily fall within the realm of the abnormal. Neither should terrorism be employed as an 'abstract noun'.[8] For, ultimately, a war against terrorism has no more meaning than a 'war against war' or a 'war against poverty' in that it defines no specific threat or realizable political ends. Nor is terrorism simply an outgrowth of grievance. Instead, terrorism should more appropriately be viewed as a military strategy. It is a method that has been employed by actors who believe, rightly or wrongly, that through such means they can advance their agenda. It is possible, therefore, to treat terrorism as a bona fide method for distributing military means to fulfill the ends of policy.[9] Indeed, the main purpose of this article is to describe the military dynamics of terrorism and evaluate their effectiveness, as well as to theorize upon – and clarify the correlation between – political ends and terrorist means.

Before doing so, it seems useful to clarify our methodological approach, especially in view of the numerous misconceptions that have been filtered through the popular – as well as some of the more serious – literature. The theoretical model used in this article is that of a non-state terrorist group competing for absolute power with a government against which its efforts are targeted. This is not to say that so-called single-issue terrorists (such as anti-abortionists, animal rights campaigners, etc.) and the issue of state terrorism are less important.[10] It just so happens that the ideas and concepts involved remain much the same in each case, and that to constantly separate out each type would make the analysis unnecessarily verbose.

Furthermore, we think that – for analytical as well as practical reasons – it makes sense to begin our evaluation of terrorism by looking at its military content. The starting point will therefore be the theoretical notion of a campaign of 'strategic terrorism', that is, one that is based on achieving political effects primarily through terrorist violence. While there is a very substantial number of contemporary terrorist campaigns to which our theoretical model of strategic terrorism can be applied (that of Al Qaeda, for example), we are conscious that there are many groups who combine terrorism with other methods of warfare as well as forms of non-violent social or political agitation. We are of the opinion that only by examining the dynamics of strategic terrorism is it possible to create the necessary conceptual basis from which to arrive at a fuller understanding of the role played by terrorist violence in the campaigns of some of the groups that have gone beyond the use of strategic terrorism in advancing their aims. In fact, we believe that outlining some of the flaws and limitations of strategic terrorism goes some way to explaining why some groups have chosen to broaden their strategy to include some of the elements mentioned above.

Finally, popular notions like terrorism as a strategy of the 'weak' and 'illegitimate' are often taken as matters of fact without further exploring them. We believe that legitimacy and relative military weakness are important variables in strategic terrorism, and they will play a central part in our analysis. However, instead of assuming these variables to be a conceptual given, we will demonstrate how they relate to, and originate from, the military dynamics of strategic terrorism, thus providing a sound theoretical rationale for their inclusion in a general strategy of terrorism rather than proceeding on the basis of

supposedly objective *a priori* notions of important concepts, which frequently lead to conceptual confusion.

This methodological approach informs the way in which this article is organized. Following an attempt to provide a working definition of strategic terrorism, we will distil its unique modus operandi and then describe the different stages which are essential to its successful conclusion. In the second part, we will demonstrate that strategic terrorism is a potentially flawed strategy, which – except in the most favorable circumstances – is unlikely to achieve the ends for which it is used. Our argument is that actors which see fit to use strategic terrorism need to generate considerable strategic momentum in order to trigger the processes which they hope to exploit. The need to escalate, however, will expose them to a number of adverse responses, which will prevent these actors from acquiring legitimacy *in the eyes of their target audience* or even cause their own destruction.

Definition

The trouble with terrorism is that most people think they know what it is but few can adequately define it.[11] The confusion surrounding the issue stems from a number of sources. The distinctive methods that many of us associate with terrorism involve the willful taking of human life and the infliction of severe mental distress, sometimes entailing, whether randomized or calculated, attacks on the innocent. Naturally, for many this introduces an ethical dimension and raises all the questions relating to concepts like just war and non-combatant immunity.[12] Furthermore, because terrorism is not considered to be value neutral, the word itself becomes an object for contention among conflicting parties in a conflict. Political conflicts are struggles for power and influence, and part of that struggle is about who labels whom. Since power tends to be largely concentrated in the hands of states, it is normally they who are able to attach the meaning to certain forms of political behavior, which is why state terror is often ignored in studies of terrorism.[13] The result of this conceptual mess is that – in trying to tie terrorism down for academic analysis – the word has been all but defined out of existence. Certainly the writers of this article know of no meaningful conclusion reached using these approaches.[14]

We do not believe that the definitional problem, which has haunted (as well as hindered) research on the subject for many decades, can be resolved through our contribution. Nevertheless, we would contend that – strictly for the purposes of this analysis – it is possible to describe terrorism as *the deliberate creation of a sense of fear, usually by the use or threat of use of symbolic acts of physical violence, to influence the political behavior of a given target group*. This definition draws on the work by T.P. Thornton, whose main study – although 40 years old – still forms one of the most informative and insightful analyses of terrorism.[15] It highlights three facets of the phenomenon:

- The violent quality of most terrorist acts, which distinguishes a program of terror from other forms of non-violent propagation, such as mass demonstration, leaf-leting, etc. Indeed, although people will sometimes experience fear and anxiety without the threat of physical harm being present, it appears to be the case that the most common vehicle for the inducement of terror is forms of physical violence.

- The nature of the violence itself. Thornton calls it 'extra-normal', meaning that for a certain level of organized political violence to be called terrorism, it must go beyond the norms of violent political agitation accepted by a particular society.

- The symbolic character of the violent act. An act of terror will imply a broader meaning than the immediate effects of the act itself; that is to say, the damage, deaths and injuries caused by the act are of limited relevance to the political message which the terrorist hopes to communicate. For this reason, the terrorist act can only be understood by appreciating its symbolic content or 'message'.

A significant problem regarding this definition of terrorism concerns the subjective nature of the emotional phenomenon of terror itself. Almost all of us have different ideas of what constitutes fear. Our thresholds of terror are likely to differ. As we will see, a terrorist can quite easily create an atmosphere of defiance rather than fear and anxiety. Neither are our thresholds of terror absolute and unchanging. A feeling of terror may dissipate the longer a terrorist campaign goes on giving rise to an atmosphere of indifference. Likewise, the sensation of terror may be influenced by the perception of the justness of the cause accorded to the actions of the terrorist by the affected populace. In that sense, we may end up back in the old dilemma of having to describe terrorism by context and notions of morality. There is, it seems, no easy way out of the terrorist enigma.

The strategy of terrorism

While a definition may help us to identify some of the essential 'ingredients' of terrorism, it tells us little about its dynamics. In this section, we aim to establish the unique modus operandi of strategic terrorism. This will be done by detailing the process whereby terrorists seek to manipulate particular variables in order to satisfy their political demands. To show how this process is distinctive, we will begin by clarifying the location of strategic terrorism within the wider spectrum of military strategies.

As indicated above, terrorism – like most forms of organized political violence – is employed to produce certain effects on a specific set of people in order to attain an objective of policy. Unlike conventional warfare, however, the aim of a strategy of terrorism is not to kill or destroy but to break the spirit and create a sensation of fear within a target group, which will cause it to initiate political change. Terrorism, therefore, is a particular form of psychological warfare; a battle of wills played out in people's minds.[16] It can thus be regarded as a prime example of coercive diplomacy, where the terrorist group seeks to deprive the enemy of things which he holds dear, not necessarily in terms of material resources, but those more elusive aspects of life such as a relatively peaceful, stable and law abiding society.[17]

In this regard, terrorism bears many similarities to forms of guerrilla warfare. Terrorism and guerrilla warfare are both dedicated to triggering the asking of a question on the part of the target group: 'is it worth paying the price to maintain the present situation?' The aim will be to raise this 'price' to a level whereby the opponent returns to reexamine the notion of vital interest.[18] Historically, this process could be observed in many anti-colonial conflicts in which violence was used in order to trigger a

reassessment of values in the colonial metropolis. As the cost of maintenance came to outweigh the benefits, the target's perception changed from a determination to preserve what was considered to be an asset to a willingness to give it up. This idea has been embodied in the concept of the 'asset to liability shift', whereby the 'asset' at the centre of a conflict does not inevitably relate to some territorial possession, but can also refer to something more intangible, such as a policy or ideology.[19]

Whereas terrorism and guerrilla warfare share the same objectives and while both are commonly seen as members of one strategic family loosely referred to as 'irregular' warfare,[20] the means to those ends differ radically, and it is here that we can discern a unique terrorist modus operandi. Much guerrilla warfare theorizing, particularly those ideas that have been filtered through Maoist and Leninist understandings, emphasizes the involvement of the masses through political organization which in many respects is considered even more important than the military struggle itself.[21] Moreover, Maoist theory postulates that the slow accumulation of military assets is necessary in order to meet enemy forces on equal terms in set-piece battles of a conventional nature in the final phase of the confrontation.[22] By contrast, those groups which employ terrorism as the main plank of their strategy – 'strategic terrorists' – seek to bypass both the mass agitation and conventional military elements of guerrilla warfare theory, believing that the use of symbolic violence alone will be sufficient to achieve the desired political ends. The process whereby they hope to achieve their aims can be thought of as involving three stages, which will be elaborated upon in the following.

Stage 1: disorientation

While the first modern terrorists – the Russian anarchists of the late nineteenth century – believed that carrying out a few daring acts of violence would be sufficient to incite the masses to rise up and bring down the government,[23] most contemporary terrorists have come to recognize that the status quo usually tends to favor the government as it controls the organs of power, and because it will therefore be regarded as the primary provider of stability and security by the vast majority of the population. As long as this remains the case, it will be difficult for the terrorists to be seen as anything but an anti-social element, bringing death and destruction to a hitherto stable society. The strategic terrorists' initial task is therefore to change this perception by undermining the psychological bond which binds the population to the regime. To use Thornton's terminology, the terrorists must attempt to remove the 'structural supports' which give a society its strength and cohesion.[24]

In this respect, disorientation is the key objective. The terrorists hope that their actions will alienate the authorities by portraying them as impotent in the defense of their citizens. To achieve this, those who adopt a program of terrorism need to disrupt the normal patterns of social interaction by escalating the violence to a level where it appears that the authorities are unable to prevent the spread of chaos.[25] Further, by sowing division, destroying cooperation and interdependence, and replacing stability with suspicion and mistrust, the terrorists aim to isolate the individual from the regime and his environment. The victim becomes concerned merely with his own survival, unable to identify the source of his fears.[26] Having thus detached the individual from his social moorings,

the terrorists hope that he will become susceptible to the alternative political program offered by the terrorists and that, at the very least, a sizeable proportion of the population will align itself with them, if only by remaining neutral in the struggle.

Something of a paradox emerges here. If we assume a degree of rationality on behalf of the terrorists, we might imagine that – being interested in winning the support of the masses – they would prefer not to carry out indiscriminate attacks because most societies put a premium on the sanctity of human life, especially those people who are deemed to be uninvolved in the conflict. And indeed, in most cases, terrorists will make an attempt to distinguish between legitimate and illegitimate targets. Legitimate targets, which typically include the institutions and the representatives of the state (politicians, officials, military personnel, policemen, judges, etc.) can be rationalized as agents of repression and, to that extent, attacks on them will represent a discriminate targeting policy. Still, continual attacks against specific targets will tend to make the threat predictable, diminishing the sense of fear as the bulk of the target group may come to feel sufficiently removed from the campaign of violence to experience a high degree of threat. It is precisely in order to create an atmosphere of terror and disorientation, to get an audience and to gain political leverage, that terrorists will feel the need to transcend established ethical barriers. Hence, a measure of indiscrimination, or at least the appearance of indiscrimination, is extremely important in order to shatter the psychological defenses of those who have escaped the immediate physical consequences of a terrorist attack – a breaking of the notion that 'it couldn't happen to me'.[27]

While this scenario sounds far-fetched, there are numerous examples – both historical and current – which illustrate the effectiveness of strategic terrorism in causing disorientation through more or less indiscriminate acts of violence. In 1957, the Algerian *Front de la Libération Nationale* (FLN) massacred a group of villagers at Melouza for supporting a rival nationalist group. The FLN denied responsibility for the atrocity and placed the blame on the French authorities. Since the French themselves were responsible for many atrocities against Algerians, most Algerians preferred to believe the FLN's version of events. Paradoxically, therefore, the legitimacy of French rule in Algeria was undermined by an atrocity that had been carried out by Paris' staunchest enemy.[28] Likewise, US forces were blamed for the terrorist bombing of a police station in Baghdad in July 2004, because American planes had been seen flying over the city at the time of the explosion. According to a news report, within minutes, crowds assembled, 'appearing angry and aggrieved, insisting that those killed were martyrs of American aggression'. Even once it had become clear that Iraqi terrorists, not American forces, had been responsible for the attack, Arabic television channels continued to blame the coalition forces, arguing that they were not doing enough to provide security. Again, the result was a loss of legitimacy and credibility for the authorities, not the terrorists who had actually committed the assault.[29]

These examples hint at one of the key variables which may determine how successful the terrorists will be at undermining the psychological bond between the population and the authorities. Clearly, when a government enjoys little popular legitimacy and is widely suspected to act contrary to the interests of the population, the terrorists will find it much easier to replace the idea of the government as a provider of security and stability. This explains why strategic terrorism has been particularly successful when the target

government was a colonial or occupying power, such as in Algeria. Moreover, because the target group is different from the one whose allegiance the terrorists hope to gain, there will be little compunction about widening one's definition of legitimate targets, especially if the terrorist attacks occur in what is believed to be the colonial metropolis.[30] As a by-product, indiscriminate attacks against a foreign enemy may also have the effect of invigorating adherents to the terrorists' cause: sympathizers will see such attacks as a sign of strength and defiance, and this might compel them to take up arms themselves in order to become part of what seems like an inevitable victory. In this type of situation, therefore, acts of terrorist violence may not only cause disorientation and deepen the populace's alienation from the authorities but in fact inspire the uprising of the masses which the Russian anarchists had envisaged.

This, indeed, could be thought of as the rationale for Al Qaeda's current campaign. On the one hand, Osama bin Laden and his affiliates aim to trigger disorientation, chaos and civil strife in secular Arab countries like Egypt by launching more or less indiscriminate attacks against government targets, foreign commercial installations, etc. On the other hand, believing that Western – and especially American – military, political and financial support is the key element which sustains many of these regimes, they have set out to strike blows at the Western 'metropolis'. This, they think, will not only drive a wedge between the Arab governments and their Western sponsors, but also incite latent militants to follow their example and commit themselves to the *jihad*.[31]

In its first stage, therefore, the strategy of terrorism primarily aims at overturning the most basic expectations of order and societal interaction, leaving the individual confused, fearful and alienated. To complete this process, however, those who employ strategic terrorism crucially depend on the inadvertent help of the target government. This represents the second stage of a terrorist campaign, which will be examined in the following section.

Stage 2: target response

As noted above, terrorism is frequently described as a strategy chosen by the 'weak', because its proponents are conscious that they lack the firepower necessary to stand a chance in a direct, conventional confrontation.[32] This often leads to the seemingly straightforward conclusion that the terrorists need to appeal to 'hearts and minds' and generate political strength in order to compensate for their military weakness. In our view, this way of looking at terrorism prevents a full understanding of the military dynamics of terrorist violence. It ignores an important element of any terrorist strategy, which is to set the target a series of (military) dilemmas and then challenge it to react. Indeed, it is our contention that – before setting out to win support for one's alternative political program – strategic terrorism relies on the target to respond in a way which unwittingly undermines its own authority.

N.O. Berry put forward a number of hypotheses that provide an idea as to what effects the terrorists hope to achieve to manipulate their enemy's response.[33] The first hypothesis is the concept of *target overreaction*, which constitutes an essential part of the process of disorientation (see above). The terrorists want to goad the government into operating beyond the legally constituted methods and into using extra-legal action. As a

result, terrorist acts will often be committed with the express purpose of triggering reprisals of a heavy-handed and possibly illegal nature.[34] Yet, even if it does not get drawn into excessive force, the government may have to rely on special police and judicial measures which will impinge on everyday life and inconvenience the ordinary citizen. The arch exponent of this theory, Carlos Marighella, was forthright on this point: he believed that curfews, road blocks, house searches, internment without trial, state-sponsored death squads and the like would make life unbearable for the ordinary citizen and cause him to turn against the government *irrespective* of whether the terrorists had made any effort at mass agitation or introduced themselves and their political ideas to the population.[35]

Berry suggests that most governments will be tempted to overreact because they tend to have an acute self-image, believing that they possess overwhelming power as well as the legitimacy to crush any challenge to its authority, and viewing the terrorists as evil. Such perceptions were evident in the response of some Latin American governments towards terrorist challenges during the 1960s and 1970s. They could also be detected in the US and Soviet reactions to the insurgencies faced in Vietnam and Afghanistan respectively. The dehumanizing of the 'communists' and 'imperialists' justified free-fire zones and village-razing. Yet, despite the massive resources fielded against the insurgents, they were unable to bring the conflict to a satisfactory conclusion. Rather, the overreactive nature of their counter-insurgency campaigns had de-legitimized the cause for which they fought, thereby increasing support for the rebels.[36]

The second hypothesis – *power deflation* – represents the opposite of target overreaction. This is a scenario where a target loses public support because it appears incapable of dealing adequately with a terrorist threat. The target believes it lacks a public consensus for its policy in dealing with a terrorist opponent it sees as cunning, formidable and even possessing a degree of legitimacy. Although the target possesses greater power than the terrorists, it will therefore be wary of taking a hard line, as it believes the terrorists to be skilful and audacious enough to try to match any counter-terrorist action with an even more spectacular reaction. In effect, the target is a prisoner of its own conscience. It wants to be seen to be acting correctly and not overreacting; yet by doing so, it prevents the implementation of an adequate anti-terrorist program which could deal effectively with the insurgent violence. This is the classic dilemma which many regimes, particularly those of a liberal democratic persuasion, are faced with in dealing with a terrorist challenge: how to balance civil liberties and accepted norms of legitimate conduct with adequate security measures to deal with a significant threat to its authority.

Another type of response is the so-called *failed repression of the moderates*. During a terrorist campaign, the target government may choose to suppress moderate, non-violent opposition. Such repression could take the form of banning political parties, closing critical newspapers, or even the arrest, torture and killing of moderates. The problem is that if the repression is not efficient, ruthless and total,[37] there is a risk that the surviving moderates will become more extreme. Believing that there will be little value in seeking compromise within the present system, the moderates may then be driven into joining those members of the opposition who seek a violent solution. The most rational explanation for pursuing any such policy is that the target recognizes the potential of an emerging coalition between extremists and moderates, and that it wants to

forestall this possibility while the relative capabilities are still in its favor.[38] In suppressing the moderates, however, it actually helps to make its 'nightmare scenario' a reality. The fall of the Shah of Iran provides a good example.

SAVAK, the Shah's secret police, was thoroughly inefficient in repressing the opponents of the regime which allowed opposition groups to coalesce against the regime. In mid-1978 the opposition was such that the Shah believed it necessary to attack a moderate protest rally in central Tehran with the result that up to 1,000 protesters were killed. This event crystallized all factions against him and he was overthrown shortly afterwards.[39]

The so-called *appeasement of the moderates* is the fourth hypothesis Berry suggests.[40] A political authority may come to believe that a terrorist insurgency is caused by legitimate grievances. The target attempts to introduce reforms to redress these grievances in the hope that doing so will undercut support for the terrorists and dissuade the moderates from being attracted to violent action. The underlying idea is that isolating the hard-liners from the moderates will make it easier for the target to crack down on the terrorists, as they will be deprived of the shelter they may have been afforded by the moderates. However, this policy entails a number of dangers.

First, the reforms will be interpreted by the terrorists as a sign of weakness, and they will therefore be encouraged to step up their campaign to force the target to capitulate to all of their political demands.[41]

Second, the target may isolate the traditional supporters of the regime who believe that the appeasement of moderates is tantamount to giving in to the terrorists. This may lead to the emergence of reactionary 'pro-state terrorists', who will complicate the target's overall position by creating yet another violent challenge to its authority.[42] Examples include the *Organisation Armée Secrete* (OAS) during the Algerian war of independence, the various Loyalist factions in Northern Ireland, as well as the United Self Defense Forces of Colombia (AUC).

Needless to say, in most situations, the government would be well-advised to avoid both over- and under-reaction, and practice a sensible policy mix of reforms and firmness. This, however, is easier said than done. Whenever governments are challenged by a terrorist campaign, the target needs to determine the relative strengths and weaknesses of the insurgent movement, and – because its authority is being challenged – it must also examine its own vulnerabilities and calculate the likely effects of the options open to it. Of course, this greater intellectual burden for the government means that the potential to make analytical and policy mistakes is greater too. Indeed, it is these opportunities that the terrorists will be waiting to exploit.

Stage 3: gaining legitimacy

Having alienated the individual from the government, the terrorists need to hold out an attractive vision of a 'new' legitimacy. In many ways, this represents the most important, yet also most difficult, stage in a campaign of strategic terrorism. Most regimes will be able to withstand the attacks of a small band of conspirators – it is only when the majority of people transcends the state of disorientation and begins to lend support to the terrorists that terrorism becomes an existential threat.

One of the main obstacles to any terrorist in effecting the shift from 'old' to 'new' legitimacy is the transmission of their political message. Where a society does not permit free and uninhibited transmission of information, the insurgents will be unable to advertise their vision of a new society, as all the channels of mass communication are controlled by the authorities. In some cases, the terrorist acts themselves will go unreported, thus negating the psychological effect of terrorism beyond those directly affected. Even in democracies, it is not all plain sailing. The vast bulk of the media is likely to be concentrated in the hands of a few media entrepreneurs, who have – by and large – benefited from the status quo and are unlikely to desire any change. Also, with its accumulated expertise and free access to the media, the government will be able to put its 'spin' on events while the terrorists may be in no position to answer any of the charges thrown at them.[43]

There are, in principle, two ways in which this barrier can be overcome. The first is through the *skilful manipulation of the media.* Sophisticated terrorists will recognize that there is a potentially symbiotic relationship between themselves and the media. All they need to do is to satisfy the media's appetite for a 'good story', which means providing the 'mystery, quick action, tension [and] drama' for which the big television networks are longing.[44] Indeed, this may be one of the reasons why hostage-takings have proved such a popular tactic. While inducing a high and sustained level of terror, they rarely end up with large numbers of casualties. Most importantly, hijackings provide days – if not weeks – of prime time news coverage. During this period, the terrorists will be granted endless opportunities to explain the rationale of their campaign.[45]

However, even the most seamless dissemination of one's political vision will not guarantee success. After all, just because a terrorist group is successful in transmitting its political message to the general public through the media does not mean that anyone will be persuaded. It is at this stage of a terrorist campaign that ideology becomes a crucial factor. The ideology of an insurgent movement offers a critique of the existing order, and it articulates an alternative set of values and beliefs. It rationalizes grievances against the prevailing order and legitimizes violent action. Most importantly, though, it determines the potential level of popular support, and will therefore ultimately affect the ability of those who employ terrorism to gain sufficient legitimacy to be recognized as an alternative provider of authority. In this respect, the most advantageous scenario for the terrorists occurs when the revolutionary ideology is already widely disseminated amongst the population, so that – when the revolt breaks out – the terrorists are accorded an instant legitimacy. This tends to be the case when their ideology is based on strong pre-existing sources of identity, such as nationality, ethnicity or religion. It has proved to be more difficult when the terrorists have espoused purely political ideologies, such as Marxism or fascism.[46]

One of the best examples of successful media manipulation is that provided by the 1970 October crisis, when the Canadian *Front de Liberation du Quebec* (FLQ) kidnapped a British diplomat as well as the Deputy Prime Minister of Quebec.[47] By issuing a series of communiqués to the media, which (apparently) leapt at the chance to broadcast them, the terrorists were able to gain maximum publicity for their demands. The terrorists deliberately ignored the Canadian government's request to negotiate through an intermediary, preferring to communicate to the authorities via the media, thus ensuring the

highest possible profile for the negotiations which in itself appeared to confer a degree of recognition and legitimacy on the FLQ. Moreover, the group's manifesto struck an emotional chord among many ordinary Quebecois. More than 50 per cent of callers on Radio Canada were sympathetic. Influential intellectuals issued a statement giving implicit support for the FLQ's aims. Thousands of students in the province staged rallies and demonstrations. The original issue – the kidnappings of the two men – had become secondary to a much wider debate concerning the limits of provincial government and the legitimacy of Quebec's nationalist aspirations.[48]

The second way in which legitimacy can be acquired is by disseminating one's message directly, that is, through *grassroots political agitation*. Although the Internet may offer a range of opportunities for doing so clandestinely, in most cases – and especially in countries where Internet access remains the privilege of the educated few – this still entails the need for a more or less open political organization, which works to broaden the support for the terrorist group through active involvement in the community. Apart from sustaining the existing political backing, political front groups may therefore mobilize sections of the population that had previously not been thought of as susceptible to the group's ideology. These people may be drawn into the movement by a charismatic local leader or the services provided by the political front organizations. As an added benefit, the grassroots organizations can be useful in providing quasi-military support to the military cells, such as intelligence, shelter and supplies. If the support is concentrated in particular regions or areas of a city, these locations may become 'no go' areas in which the terrorists can organize and recruit freely.

There are numerous examples of terrorist groups that have successfully established political front organizations in order to consolidate and broaden their support. In Western Europe, this has mostly been in the form of political parties, such as *Heri Batasuna* (the political wing of the Basque terrorist organization ETA) and *Sinn Fein* (the IRA's political front). In the Middle East, on the other hand, terrorist groups have set up extensive welfare networks, including hospitals, kindergartens and schools. Terrorist organizations like *Hamas* in the Palestinian territories and *Hezbollah* in Lebanon have thus been able to grow into genuine mass movements that command a large and relatively stable political constituency.[49]

Grassroots political agitation can undoubtedly be effective. However, it raises the question if – at this stage – the activity of a terrorist group can still be described as strategic terrorism. After all, one of the central tenets of this strategy is that calculated terrorist violence alone is sufficient to bring about political change. By engaging in long-term grassroots activism, the terrorists suggest that mass organization – as proposed by Mao and others – is a necessary requirement for political success, and that the utility of terrorism is limited in gaining legitimacy. Indeed, by shifting their focus from acts of terrorism to political agitation, they concede that all that strategic terrorism can ever hope for is to destroy the legitimacy of the existing regime and thus create an opening for new political actors, but that terrorist violence will at some point have to give way, allowing more conventional forms of struggle to emerge. The wider question, therefore, seems obvious: what are the limitations of strategic terrorism?

The limitations of strategic terrorism

As mentioned above, the central objective of most terrorist organizations is to drain the political authority of the target, undermine its ability to maintain the allegiance of its people and prevent it from responding adequately to the terrorist challenge. The eventual purpose of doing so is to erode the target's legitimacy and replace it with that of the insurgents. It is easy to reduce terrorist struggles to these few semantic equations, but they hide a myriad of practical and analytical problems.[50] The main problem with the strategy of terrorism concerns the very element which is meant to make terrorism such a potent weapon, the manipulation of the psychology of fear. In this respect, terrorism is based on a series of assumptions about individual, collective and institutional behavior under stress which are either false or wholly unproven. In the following, we will first address the assumptions we believe to be the most doubtful, and then show how, as a result, terrorist strategies are likely to end up in either defeat or irrelevance.

Assumptions

One of the key assumptions of strategic terrorism is that the target group's determination to hold on to a particular policy or possession will collapse once it has been exposed to terrorist violence. This assumption is based on the colonial experience, when terrorists demonstrated that the will of the target group can be undermined, government repression induced and support for the terrorist cause gained. As noted above, situations of foreign occupation are by far the most favorable from the terrorists' point of view, because the authorities' legitimacy can be assumed to be very low to begin with. In our view, it is highly questionable whether these conditions can easily be imitated in different contexts.

Furthermore, even during the period of de-colonization, contexts varied widely. Rather than merely relying on the correct application of certain military mechanics, the insurgents' success depended on a full appreciation of the specific political and even cultural circumstances within which the campaign was taking place. For instance, it would have been inadequate if the Algerian FLN had calculated that all they needed to do to get the French to leave Algeria would be to increase the violence to the level of that inflicted by Jewish terrorist groups on the British, which is regarded as a factor that induced Britain to evacuate Palestine.[51] Undoubtedly, this would have caused the French a large measure of inconvenience but it would have never forced them to leave Algeria. The nature of the relationship that France had with her colonies was altogether different from Britain's. For many, Algeria was an extension of metropolitan France and a strong emotional attachment had developed and ingrained itself into the French psyche in the form of *Algérie française*.[52] It was the prime task of the rebels to break this psychological bond, not just to escalate the violence to a particular level. In terms of military dynamics, this meant that the FLN strategy had to sustain a high and widespread level of violence for a considerable period of time while being prepared to endure enormous losses themselves.

Removing an independent, indigenous government is even less clearcut. On the one hand, the target is going to be more determined to resist, as its core interest – that is, its

own survival – is threatened. More importantly, in contrast to an anti-colonial situation in which a wide cross-section of the community will be latently sympathetic to the terrorists' cause, the population is likely to be divided between backers and opponents of the terrorists' cause. As a consequence, those who utilize terrorist methods need to minimize civilian casualties in order not to alienate support, which in turn will make it more difficult to develop the dynamics of violence necessary to unleash the sense of fear and terror that will trigger the anticipated disorientation and eventual transfer of legitimacy. Indeed, while most societies – like most people – have some psychological breaking point, the abject failure of contemporary terrorists to achieve their political aims demonstrates that most terrorist groups grossly underestimate the scale of violence needed to reach this point.

The second assumption, which we consider overly optimistic, relates to the idea that a terrorist campaign will instill a degree of fear within the target population. In fact, even if the terrorists manage to generate an atmosphere of fear and apprehension, this will not necessarily be channeled in the direction the terrorists would hope. Instead of becoming disoriented, the public may blame the terrorists for the deteriorating situation; and rather than being alienated by the repressive reaction of the regime, the counterterrorist measures may turn out to have the full support of the people. Therefore, far from estranging the people from state structures, it is the terrorists who become alienated and repudiated. In that sense, a terrorist campaign may reinforce people's faith in the government and increase their reliance on the state, which is exactly the reverse of what the terrorists want to happen.[53] A good example is the British public's response to the IRA's so-called England campaign, which aimed at weakening the resolve to uphold British sovereignty over Northern Ireland. As it turned out, whenever the IRA committed atrocities in England, there emerged a strong notion of defiance, that is, that one must not 'give in to terrorists'. When asked what effect IRA bombs had, only 28 per cent of the respondents to a 1984 MORI poll declared that they were more likely to support British withdrawal, while a majority (53 per cent) favored 'tougher action'.[54]

Another possible effect of a terrorist campaign – especially if it goes on for an extended period – is that, far from creating and sustaining an atmosphere of terror, a climate of indifference arises. Constant acts of terror may simply numb the public to a point where they are prepared to tolerate a degree of terrorism just as they may tolerate a degree of crime, deaths through road accidents and other abnormal events. In this context, terrorism becomes meaningless, as it loses its symbolism, its unpredictability and therefore its power to terrify. Grant Wardlaw investigated this aspect of the terrorist phenomenon by looking at some studies of individual reactions to stress cause by air raids in World War Two. These studies revealed that people who suffered personal loss, injury and narrow escape were caused considerable psychological stress. However, they also revealed that those who were not directly affected became anaesthetized to the bombing.[55] This tends to confirm that people can adjust to even high levels of violence and physical threat.

Furthermore, the longer a terrorist campaign goes on, not only will the power to terrify be diminished, but its propaganda will also become less effective. Of course, there is always the option of engaging in highly indiscriminate attacks, which will guarantee widespread and attentive media coverage regardless of how long a campaign had been

going on. At the same time, when carried out in the 'gaining legitimacy' stage of a terrorist campaign, the large-scale killing of civilians will focus public attention on the purely negative aspects of a campaign to the exclusion of the presumably 'positive' political message that the terrorists will hope to project. Rather than helping to make the terrorists' cause more popular, one may speculate that such attacks would enable the target to 'turn the tables' and crush the conspirators. On the other hand, the propaganda yield of low-risk operations will dissipate over time with the eventual result that people may simply ignore the terrorists. As a result, the terrorists will face a difficult task convincing the public of the justice of their cause while maintaining the strategic momentum. Indeed, it is this latent contradiction between military needs, capabilities and desired impact that creates severe and continued dilemmas, which we will deal with next.

The escalation trap

In terms of military dynamics, for a group that practices strategic terrorism to achieve maximum effectiveness, its campaign must be sudden, brutal, unpredictable and indiscriminate. The aim must be to shock, disorientate and psychologically bludgeon a target group into submission in the shortest possible time. To allow a campaign to become extended or escalate incrementally may provide enough time for the target group to re-orientate itself and to adapt and accept a new level of violence. Therefore, if a campaign becomes prolonged, there is only one option open to the terrorists to maintain any sort of coherence to their strategy, and that is to escalate the campaign to a new, higher level of destruction sufficient to maintain a sense of terror. If they are to have any expectation of victory, they must be prepared to continually escalate the conflict at each stage in order to prevent re-orientation.

The need to escalate, however, raises a number of difficulties.

First, it is doubtful whether terrorist organizations possess the necessary capabilities to increase the scale of violence to unacceptable levels. Not only is it likely that organizations will lack the personnel, logistical and financial support to maintain the military momentum, but the probability of factional divisions is liable to limit any attempt at escalation.

Second, there is the constant danger that brutal and indiscriminate violence will lead to an erosion of public sympathy. If the various stages of a terrorist campaign are designed to overcome the latent contradiction between engaging in more or less indiscriminate violence and the attempt to gain legitimacy, the need for escalation is bound to intensify this paradox.

The third – and possibly most significant – danger is that any effort to escalate a terrorist campaign may provoke counter-escalation from the target government, which will result in the destruction of the insurgent movement. The dilemma here is that, while the terrorists need to elicit an inefficient act of repression that will highlight the 'unjust' nature of the regime, any belligerent that faces a militarily more potent adversary has to take extreme care not to push the enemy into a corner to a point where it feels sufficiently desperate to escalate the war to a level at which the repression becomes ruthless and total, thus threatening the terrorist group's very existence.

The terrorist experience in Latin America provides some poignant examples. Initially, the terrorist campaigns in Argentina and Uruguay provoked an incompetent as well as inefficient response on behalf of their respective governments. Yet, in both countries, there appeared to be a point when the inefficient repression stopped and the brutal repression began. Fearful of the deteriorating situation and of the revolutionary goals of the terrorists, important interest groups – normally the armed forces backed by large sections of the community – took over and carried out a more rigorous counter-terrorist policy. Even if some people disapproved of the methods, the terrorist movements in question were unable to survive the concerted onslaught which followed their decision to escalate.[56] A similar response pattern could be observed in Egypt. Following years of unrest and sporadic terrorist violence, including a near-successful attempt to assassinate President Hosni Mubarak, the terrorist campaign of various Islamist factions reached its height with the massacre of 60 people – most of them tourists – at Luxor in November 1997. This attack had resulted from a conscious decision to escalate the campaign. However, rather than forcing a political crisis that would lead to the downfall of the secular regime, the government embarked on a campaign of full-scale repression. Striking back at the various Islamist factions with brute force, the Egyptian security forces managed to destroy some of the smaller groups, and rendered the capabilities of the others ineffective.[57]

These examples lead us to an important insight, which helps to establish a key correlation between military and political dynamics in any campaign of strategic terrorism. Because the terrorists have to exercise caution for fear of inducing a response that will destroy them, they would have to empathize with their enemy in order to understand the sort of pressures which impinge upon their decision making. The terrorists would need to assess the limit to which a target might be able to concede without alienating important political constituencies, how favorably it would respond to compromise and what its reactions to increased military pressure are likely to be. In other words, they would have to engage in an ongoing analysis of their own strategic position, and be ready to adjust their means in the light of changing military and political conditions more appropriate to their ends. While some sub-revolutionary terrorists may be capable of forming such judgments (indeed, they may have adopted sub-revolutionary goals precisely because they realize that they are unlikely to win against a stronger opponent), most revolutionary terrorists – especially those of an absolutist variety, such as religiously-inspired insurgents – are not. For them, there can be no question of compromise within the prevailing order. The only satisfactory outcome is complete victory and the transformation of the political system.[58]

As a consequence, terrorist campaigns usually take one of two possible turns. The terrorists who are either incapable of increasing the violence or careful not to fall into the 'escalation trap' are likely to lose strategic momentum and get bogged down in drawn-out, low-level campaigns which never achieves the impetus necessary to bring about political change. Those, however, who manage to escalate their campaigns will face internal divisions, a hostile reaction from the population in whose name they claim to act, and may invite their own destruction by provoking a ruthless and effective campaign of repression from the target government.

Conclusion

Often the notion of terrorism is employed either as an empty rhetorical noun or dismissed as an aberrant form of behavior without any rational explanation. Yet the employment of organized armed force, no matter how deviant or apolitical it may appear, will invariably be undertaken to achieve a particular set of goals. This analysis has sought to lay out a strategic framework by which those who utilize a campaign of terrorism seek to attain their ends through military means. In doing so, this study has identified a distinctive modus operandi that points at the dynamics a strategy of terrorism will seek to unleash in order to further political and military objectives:

1 Disorientation: to alienate the authorities from their citizens, reducing the government to impotence in the eyes of the population, which will be perceived as unable to cope with a situation of evolving chaos.
2 Target response: to induce a government to respond in a manner that is favorable to the insurgent cause such as provoking it into actions that are illegal or regarded as repressive overreactions that destroy the political middle-ground.
3 Gaining legitimacy: to exploit the emotional impact of the violence to insert an alternative political message and seek to broaden support, often through the media or political front organizations.

In highlighting the military dynamics that arise during these phases, we were able to derive some of the key variables that interact with the terrorist application of military force, and shed some light on the relationship between ends and means in strategic terrorism. For example, rather than simply stating that terrorism is a strategy of the 'weak' and 'illegitimate' as a matter of fact, our analysis made it possible to explain how legitimacy and military weakness influence the military dynamics of a terrorist group at the different stages of its strategic evolution, and how they may condition its overall success. In this regard, we were also able to explain why terrorist groups may at some point have to resort to grassroots agitation in order to gain legitimacy, thus diluting the reliance on strategic terrorism as the main plank of their strategy.

   Throughout this assessment we have endeavored to show that this framework does not exist purely as a theoretical hypothesis. We have sought to empirically validate this framework by demonstrating that groups have employed terrorist means in the manner described above to facilitate their goals through a rational calculation of the utility of their methods. At the same time, by elucidating the strategy of terrorism, the analysis reveals not only the instrumentality of terrorist methods but also their inherent limitations. The potential fallacies stem primarily from the fact that terrorism relies on inducing a reaction in the target that is favorable to the terrorists' goals. Strategic terrorism, therefore, rests on a series of assumptions about how a target audience will respond to a campaign of terrorist violence. The success of a terrorist strategy is thus crucially dependent on the wider context of a conflict. If the target population is prepared to endure a campaign of terror, then its potency will be eroded – terrorism will lose its power to terrify. Or, even worse for the terrorists, the lack of target reaction leads to an escalation in the terror campaign which provokes a backlash of such ferocity that the

terrorists themselves are unable to survive the 'overreaction' that they wish to induce in their opponent.

In this respect, the main weakness in any terrorist campaign is that it seeks to overcome deficiencies in military power by the manipulation of the emotional impact of (usually) relatively small-scale attacks. The strategy rests on the premise that a militarily more powerful adversary will in some way feel restrained, either for political or moral reasons, from bringing the full force of its military superiority to bear on its inferior enemy. Herein lies the main flaw in the strategy of terrorism: it relies exclusively on the exploitation of the psychological rather than the destructive effects of armed action, thereby rendering it vulnerable to those who are willing to view the resolution of clashes of interest principally in terms of the tangibles of military power.

The philosopher of war, Carl von Clausewitz, whose writings are seen, wrongly, by many contemporary analysts as having little to say on the current condition of an international environment characterized by an increasing recourse to terrorist violence, presciently observed: 'If the political aims [in war] are small, the motives slight and tensions low, a prudent general may look for any way to avoid major crises and decisive actions, exploit any weaknesses in the opponent's military and political strategy, and reach a political settlement'.[59] This encapsulates the primary elements in a strategy of terrorism: namely, that if the goals of a combatant are relatively limited and do not affect issues of national survival then they may be able to attain their objectives through less direct means than destroying an opponent's means of resistance (that is, the adversary's armed forces). As Clausewitz noted, if the general's 'assumptions are sound and promise success we are not entitled to criticize him'. 'But,' as Clausewitz went on to caution, 'he must never forget he is moving on a devious path where the god of war may catch him unawares.'[60]

Notes

1 Bazzam Baz, *Terrorism Survival Handbook* (Los Angeles, CA: Costa Communications 2001); Giovanna Borradori, Juergen Habermas and Jacques Derrida, *Philosophy in a Time of Terror* (Chicago, IL: University of Chicago Press 2003).
2 Donald H. Rumsfeld, 'A New Kind of War', *New York Times*, 27 Sept. 2001.
3 See Walter Laqueur, 'Postmodern Terrorism: New Rules for an Old Game', *Foreign Affairs 75/5* (1996) pp.24–36.
4 See, for example, Barry R. Posen, 'The Struggle Against Terrorism: Grand Strategy, Strategy, and Tactics', *International Security 26/3* (2001) pp.39–55.
5 The only scholar to have explored terrorism as a strategy is Martha Crenshaw, whose work continues to be essential in developing a comprehensive understanding of the phenomenon. See, for example, Martha Crenshaw, 'The Logic of Terrorism: Terrorist Behavior as a Product of Strategic Choice', in Walter Reich (ed.), *Origins of Terrorism*, 2nd edn (Washington, DC: Woodrow Wilson Center Press 1998) pp.7–24; and Martha Crenshaw, 'Theories of Terrorism: Instrumental and Organizational Approaches', in David C. Rapoport (ed.), *Inside Terrorist Organizations*, 2nd edn (London: Frank Cass 2001) pp.13–31.
6 Bruce Cumings, quoted in Craig Calhoun, Paul Price and Ashley Timmer (eds), *Understanding September 11* (New York: New Press/Social Science Research Council 2002) p.198.
7 Quoted in Alastair Sooke, 'Rimington Hits Out at US Over Detainees', *Daily Telegraph*, 18 Aug. 2004.

8 A phrase coined by Tom Utley. See 'The Moment I Saw Bush Had Grasped the Point of the War', *Daily Telegraph*, 28 Sept. 2001.

9 This, of course, reflects Clausewitz' classical understanding of strategy 'the use of engagements for the object of war'. See Carl von Clausewitz, *On War* (trans. and ed.) Michael Howard and Peter Paret (Princeton, NJ: Princeton UP 1984) p.128.

10 On the issue of state terrorism, see Alexander George (ed.), *Western State Terrorism* (Cambridge: Polity Press 1991). For single-issue terrorism, see G. Davidson Smith, 'Single Issue Terrorism', *Commentary* 74 (Winter 1998). The full text can be found at http://www.fas.org/irp/threat/com74e.htm; also Walter Laqueur, *New Terrorism* (London: Phoenix, 2001), esp. Chap. 8 ('Exotic Terrorism').

11 Ibid., pp.5–6.

12 For definitions based on terrorism as a form of violence against the 'innocent', see Christopher C. Harmon, *Terrorism Today* (London: Frank Cass 2000) p.21; Jessica Stern, *The Ultimate Terrorists* (Cambridge, MA: Harvard UP 1999) p.11.

13 See, for example, Eqbal Ahmad and David Barsmain, *Terrorism: Theirs and Ours* (New York: Seven Stories Press 2001).

14 For further definitions of terrorism, see Bruce Hoffman, *Inside Terrorism* (New York: Columbia UP 1998), esp. Chap. 1 ('Defining Terrorism'); Alex P. Schmid *et al.* (eds), *Political Terrorism: A Guide to Actors, Authors, Concepts, Data Bases, Theories, and Literature* (New Brunswick: Transaction Books 1988).

15 T.P. Thornton, 'Terror as a Weapon of Political Agitation' in Harry Eckstein (ed.), *Internal War: Problems and Approaches* (New York: Free Press 1964) pp.71–99.

16 Gerard Chaliand, *Terrorism: From Popular Struggle to Media Spectacle* (London: Saqi Books 1987) pp.107–12.

17 Ernest Evans, *Calling a Truce to Terror* (Westport, CO: Greenwood Press 1979) p.29.

18 J. Bowyer Bell, *The Myth of the Guerrilla* (New York: Knopf 1971) p.55.

19 For a concise explanation of the concept, see Maurice Tugwell, 'Politics and Propaganda of the Provisional IRA', in Paul Wilkinson (ed.), *British Perspectives on Terrorism* (London: George Allen and Unwin 1981) pp.14–16.

20 For an elaboration of the problems with terms like 'small wars', 'insurgency', 'irregular' or 'low-intensity' warfare, see M.L.R. Smith, 'Guerrillas in the Mist: Reassessing Strategy and Low Intensity Warfare', *Review of International Studies* 29/1 (2003) pp.20–23.

21 See Colin S. Gray, *Modern Strategy* (Oxford: Oxford UP 1999) pp.281–96.

22 Mao Tse Tung, *On Guerrilla Warfare* (New York: Anchor Press 1978) pp.25–9.

23 This idea became known as the 'propaganda of the deed'. See Peter Kropotkin, *Paroles d'un Revolte* (Paris: Ernest Flammarion 1885) p.286.

24 Thornton, 'Terror as a Weapon' (note 15) p.74.

25 Peter Knauss and D.A. Strickland, 'Political Disintegration and Latent Terror', in Michael Stohl (ed.), *The Politics of Terrorism* (New York: Marcel Dekker 1979) p.77.

26 Martha Crenshaw, 'The Concept of Revolutionary Terrorism', *Journal of Conflict Resolution* 6 (1973) p.388.

27 See Irving Janis, *Air War and Emotional Stress* (New York: McGraw Hill 1979) p.23.

28 See Grant Wardlaw, *Political Terrorism: Theory, Tactics and Counter-measures* (Cambridge: Cambridge UP 1982) p.7.

29 Doug Struck, 'One Bombing, Many Versions', *Washington Post*, 20 July 2004.

30 Lawrence Freedman, 'Terrorism and Strategy', in Lawrence Freedman *et al.* (eds.), *Terrorism and International Order* (London: Routledge 1986) p.61.

31 Jason Burke, 'Think Again: Al Qaeda', *Foreign Policy*, May/June 2004.

32 See, for example, Crenshaw, 'The Logic of Terrorism' (note 5) pp.13–15.

33 N.O. Berry, 'Theories on the Efficacy of Terrorism', in Paul Wilkinson and A.M. Stewart (eds), *Contemporary Research on Terrorism* (Aberdeen: Aberdeen UP 1987) pp.293–304.

34 Paul Wilkinson, *Terrorism and the Liberal State* (London: Macmillan 1986) pp.296–8.

35 Carlos Marighella, *Minimanual of the Urban Guerrilla* (Montreal: Abraham Guillen Press 2002). The full text can be found at <www.marxists.org/archive/marighella-carlos/1969/06/minimanual-urban-guerrilla/>.

36 For an account of the Soviet experience in Afghanistan, see Scott R. McMichael, *Stumbling Bear* (London: Brassey's 1991). On the strategy and tactics of the US Army in Vietnam, see

Andrew F. Krepinevich, *The Army in Vietnam* (Baltimore, MA: Johns Hopkins Press 1986) pp.194–214.

37 Leonard Weinberg found that terrorism is more likely to occur in democracies than in non-democracies, but also that it is 'weak repressive' regimes rather than those that are ruthless and total which provide a breeding ground for terrorists. See William Lee Eubank and Leonard Weinberg, 'Does Democracy Encourage Terrorism?', *Terrorism and Political Violence* 6/4 (1994) pp.417–43.

38 Berry, 'Theories' (note 33) pp.298–300.

39 See Amir Tahiri, *The Spirit of Allah: Khomeini and the Islamic Revolution* (London: Hutchinson 1985).

40 Berry, 'Theories' (note 33) pp.299–300.

41 Reforms carried out during an insurgency raise the question of what is known as relative success. Robert Taber, for example, believes that any government concessions which try to accommodate the insurgents can be regarded as surrender because the government is an agent and protector of the status quo and anything which forces an alteration is a defeat. On the other hand, it could be argued that the very essence of counter-insurgency is not to prevent change but to manage it to one's own advantage. See Robert Taber, *War of the Flea* (London: Paladin 1970) p.24.

42 Steve Bruce, 'The Problem of Pro-State Terrorism: Loyalist Paramilitaries in Northern Ireland', *Terrorism and Political Violence* 4/1 (1992) pp.67–88.

43 See Brigitte Nacos, *Mass-mediated Terrorism: the Central Role of the Media in Terrorism and Counterterrorism* (Oxford: Rowman and Littlefield 2002); David L. Paletz and Alex P. Schmid (eds), *Terrorism and the Media* (London: Sage 1992).

44 Walter Laqueur, 'Terrorism – a Balance Sheet', in Walter Laqueur (ed.), *The Terrorism Reader* (Philadelphia, PA: Temple UP 1978) p.261.

45 See, for example, the hijacking of TWA flight 847 by Lebanese Shiite terrorists in 1985: Hoffman, *Inside Terrorism* (note 14) pp.132–5.

46 See Laqueur, 'Terrorism – a Balance Sheet' (note 44) p.258.

47 Ronald D. Crelinsten, 'Power and Meaning: Terrorism as Struggle over Access to the Communication Structure', in Paul Wilkinson and A.M. Stewart (eds), *Contemporary Research on Terrorism* (Aberdeen: Aberdeen UP 1987) pp.419–50: see also Ronald D. Crelinsten, 'The Internal Dynamics of the FLQ During the October Crisis of 1970', in David C. Rapoport (ed.), *Inside Terrorist Organizations*, 2nd edn. (London: Frank Cass 2001) pp.59–89.

48 Crelinsten, 'Power and Meaning' (note 47) p.427.

49 See Cynthia L. Irvin, *Militant Nationalism: Between Movement and Party in Ireland and the Basque Country* (Minneapolis, MN: University of Minnesota Press 1999); Judith Palmer Harik, *Hezbollah: The Changing Face of Terrorism* (London: I.B. Tauris 2004), esp. Chap. 6 ('Serving the Umma – Hezbollah as Employer and Welfare Organization'); Shaul Mishal and Avraham Sela, *The Palestinian Hamas* (New York: Columbia UP 2000), esp. Chaps 1 and 6 ('Social Roots and Institutional Development' and 'Controlled Participation').

50 For example, there are numerous operational and tactical weaknesses resulting from the fact that all terrorist organizations begin as small conspiratorial groups, making them vulnerable to institutional dynamics, deficiencies in command and control, lack of logistical support, etc. Many of these problems are addressed in the writings of Abraham Guillen, who was close to the Uruguayan *Tupamaros*. See Abraham Guillen, *Philosophy of the Urban Guerrilla: The Revolutionary Writings of Abraham Guillen* (New York: William Morrow 1973). For a more contemporary, academic assessment of group dynamics within terrorist groups, see Jerrold M. Post, 'Terrorist Psycho-logic: Terrorist Behavior as a Product of Psychological Forces', in Walter Reich, *Origins of Terrorism* (note 5) pp.25–40.

51 See Hoffman, *Inside Terrorism* (note 14) pp.48–58.

52 See Alistair Horne, *A Savage War of Peace, Algeria, 1954–1962* (London: Penguin 1987) pp.183–207.

53 Knauss and Strickland, 'Political Disintegration' (note 25) pp.87–8.

54 'For Prior's Heir, An Even Harder Task', *The Times*, 23 Aug. 1984.

55 Wardlaw, *Political Terrorism* (note 28) pp.35–6. The sources cited by Wardlaw are P.E. Vernon, 'Psychological Effects of Air Raids', *Journal of Abnormal and Social Psychology* 36 (1941) pp.457–76 and Melitta Schmideberg, 'Some Observations on Individual Reactions to Air Raids', *International Journal of Psychoanalysis* 23 (1942) pp.146–76.

56 See Richard Gillespie, 'Political Violence in Argentina: Guerrillas, Terrorists, and *Carapintadas*', in Martha Crenshaw, *Terrorism in Context* (University Park, PA: University of Pennsylvania Press 1995) pp.211–48.

57 See Gilles Keppel, *Jihad: The Trail of Political Islam* (London: I.B. Tauris 2003), esp. Chap. 12 ('The Threat of Terrorism in Egypt').

58 See Mark Juergensmeyer, *Terror in the Name of God*, 2nd edn (Berkeley, CA: University of California Press 2000); Magnus Ranstorp, 'Terrorism in the Name of Religion', *Journal of International Affairs* 50 (Summer 1996) pp.41–62.

59 Clausewitz, *On War* (note 9) p.99.

60 Ibid.

18 Hybrid warfare and challenges

Frank G. Hoffman

The U.S. military faces an era of enormous complexity. This complexity has been extended by globalization, the proliferation of advanced technology, violent transnational extremists, and resurgent powers. America's vaunted military might stand atop all others but is tested in many ways. Trying to understand the possible perturbations the future poses to our interests is a daunting challenge. But, as usual, a familiarity with history is our best aid to interpretation. In particular, that great and timeless illuminator of conflict, chance, and human nature—Thucydides—is as relevant and revealing as ever.

In his classic history, Thucydides detailed the savage 27-year conflict between Sparta and Athens. Sparta was the overwhelming land power of its day, and its hoplites were drilled to perfection. The Athenians, led by Pericles, were the supreme maritime power, supported by a walled capital, a fleet of powerful triremes, and tributary allies. The Spartan leader, Archidamius, warned his kinsmen about Athens' relative power, but the Spartans and their supporters would not heed their king. In 431 BCE, the Spartans marched through Attica and ravaged the Athenian country estates and surrounding farms. They encamped and awaited the Athenian heralds and army for what they hoped would be a decisive battle and a short war.[1]

The scarlet-clad Spartans learned the first lesson of military history—*the enemy gets a vote*. The Athenians elected to remain behind their walls and fight a protracted campaign that played to their strengths and worked against their enemies. Thucydides' ponderous tome on the carnage of the Peloponnesian War is an extended history of the operational adaptation of each side as they strove to gain a sustainable advantage over their enemy. These key lessons are, as he intended, a valuable "possession for all time."

In the midst of an ongoing inter-Service roles and missions review, and an upcoming defense review, these lessons need to be underlined. As we begin to debate the scale and shape of the Armed Forces, an acute appreciation of history's hard-earned lessons will remain useful. Tomorrow's enemies will still get a vote, and they will remain as cunning and elusive as today's foes. They may be more lethal and more implacable. We should plan accordingly.

One should normally eschew simplistic metanarratives, especially in dynamic and nonlinear times. However, the evolving character of conflict that we currently face is best characterized by *convergence*. This includes the convergence of the physical and psychological, the kinetic and nonkinetic, and combatants and noncombatants. So, too,

we see the convergence of military force and the interagency community, of states and nonstate actors, and of the capabilities they are armed with. Of greatest relevance are the converging modes of war. What once might have been distinct operational types or categorizations among terrorism and conventional, criminal, and irregular warfare have less utility today.

Current strategic thinking

The 2005 National Defense Strategy (NDS) was noteworthy for its expanded understanding of modern threats. Instead of the historical emphasis on conventional state-based threats, the strategy defined a broadening range of challenges including traditional, irregular, terrorist, and disruptive threats. The strategy outlined the relative probability of these threats and acknowledged America's increased vulnerability to less conventional methods of conflict. The strategy even noted that the Department of Defense (DOD) was "over invested" in the traditional mode of warfare and needed to shift resources and attention to other challengers.

While civil and intrastate conflicts have always had a higher frequency, their strategic impact and operational effects had little impact on Western military forces, and especially U.S. forces, which focused on the significantly more challenging nature of state-based threats and high-intensity conventional warfighting. This focus is partly responsible for America's overwhelming military superiority today, measured in terms of conventional capability and its ability to project power globally. This investment priority and American force capabilities will have to change, however, as new environmental conditions influence both the frequency and character of conflict.

Subsequent to the strategy's articulation, a number of U.S. and foreign analysts complimented DOD strategists for moving beyond a myopic preoccupation with conventional war. But these analysts have also identified an increased blurring of war forms, rather than the conveniently distinct categorizations found in the NDS. Yet the strategy itself did suggest that the most complex challengers of the future could seek synergies from the simultaneous application of multiple modes of war. The NDS explicitly admitted that the challenger categories could and would overlap and that "recent experience indicates . . . the most dangerous circumstances arise when we face a complex of challenges. Finally, in the future, the most capable opponents may seek to combine truly disruptive capacity with traditional, irregular, or catastrophic forms of warfare."[2]

This matches the views of many military analysts, who have suggested that future conflict will be *multi-modal* or *multi-variant* rather than a simple black or white characterization of one form of warfare. Thus, many analysts are calling for greater attention to more blurring and blending of war forms in combinations of increasing frequency and lethality. This construct is most frequently described as "hybrid warfare," in which the adversary will most likely present unique combinational or *hybrid* threats specifically targeting U.S. vulnerabilities. Instead of separate challengers with fundamentally different approaches (conventional, irregular, or terrorist), we can expect to face competitors who will employ *all* forms of war and tactics, perhaps simultaneously. Criminal activity may also be considered part of this problem, as it either further destabilizes local government or abets the insurgent or irregular warrior by providing resources. This

could involve smuggling, narcoterrorism, illicit transfers of advanced munitions or weapons, or the exploitation of urban gang networks.

A number of analysts have highlighted this blurring of lines between modes of war. They suggest that our greatest challenge in the future will not come from a state that selects one approach but from states or groups that select from the whole menu of tactics and technologies and blend them in innovative ways to meet their own strategic culture, geography, and aims. As Michael Evans of the Australian Defence Academy wrote well before the last Quadrennial Defense Review, "The possibility of continuous sporadic armed conflict, its engagements blurred together in time and space, waged on several levels by a large array of national and sub-national forces, means that war is likely to transcend neat divisions into distinct categories."[3]

Numerous scholars are now acknowledging the mixing likely in future conflicts. Colin Gray has admitted the one feature that "we can predict with confidence is that there is going to be a blurring, a further blurring, of warfare categories."[4] British and Australian officers have moved ahead and begun the hard work of drawing out implications and the desired countercapabilities required to effectively operate against hybrid threats. The British have gone past American doctrine writers and already incorporated hybrid threats within their construct for irregular war.[5] Australian military analysts remain on the front lines of inquiry in this area.[6]

Theorists responsible for some of the most cutting edge thinking in alternative modes of war and associated organizational implications continue to explore the blurring of conflict types. John Arquilla, an expert in irregular warfare, has concluded that "[n]etworks have even shown a capacity to wage war toe-to-toe against nation-states— with some success. . . . The range of choices available to networks thus covers an entire spectrum of conflict, posing the prospect of a significant blurring of the lines between insurgency, terror, and war."[7]

Some research has been done on civil wars as hybrid conflicts. Other research focuses on the nature of the societies involved. But hybrid wars are much more than just conflicts between states and other armed groups. It is the application of the various forms of conflict that best distinguishes hybrid threats or conflicts. This is especially true since hybrid wars can be conducted by both states and a variety of nonstate actors. Hybrid threats incorporate a full range of modes of warfare, including conventional capabilities, irregular tactics and formations, terrorist acts that include indiscriminate violence and coercion, and criminal disorder. These multi-modal activities can be conducted by separate units, or even by the same unit, but are generally operationally and tactically directed and coordinated within the main battlespace to achieve synergistic effects in the physical *and* psychological dimensions of conflict. The effects can be gained at all levels of war. Thus, the compression of the levels of war is complicated by a simultaneous convergence of modes. The novelty of this combination and the innovative adaptations of existing systems by the hybrid threat is a further complexity. As one insightful student of war noted:

> *Hybrid forces can effectively incorporate technologically advanced systems into their force structure and strategy, and use these systems in ways that are beyond the intended employment parameters. Operationally, hybrid military forces are superior to Western forces within their limited operational spectrum.*[8]

Hybrid wars are not new, but they are different. In this kind of warfare, forces become blurred into the same force or are applied in the same battlespace. The combination of irregular and conventional force capabilities, either operationally or tactically integrated, is quite challenging, but historically it is not necessarily a unique phenomenon.[9] The British faced a hybrid threat at the turn of the last century when the Boers employed Mauser rifles and Krupp field guns and outranged their red-clad adversary. Ultimately, the British adapted and ran down the Boer commandos. The fierce defense of Grozny by the Chechens is another potential hybrid case study. But both were bloody and protracted conflicts that arguably required more military resources and greater combat capabilities than classical counterinsurgencies and Field Manual 3–24, *Counterinsurgency*, would suggest.

Compound wars

Historians have noted that many if not most wars are characterized by both regular and irregular operations. When a significant degree of strategic coordination between separate regular and irregular forces in conflicts occurs, they can be considered "compound wars." Compound wars are those major wars that had significant regular and irregular components fighting simultaneously under unified direction.[10] The complementary effects of compound warfare are generated by its ability to exploit the advantages of each kind of force and increase the nature of the threat posed by each kind of force. The irregular force attacks weak areas, compelling a conventional opponent to disperse his security forces. The conventional force generally induces the adversary to concentrate for defense or to achieve critical mass for decisive offensive operations.

One can see this in the American Revolution, when George Washington's more conventional troops stood as a force in being for much of the war, while the South Carolina campaign was characterized by militia and some irregular combat.[11] The Napoleonic era is frequently viewed in terms of its massive armies marching back and forth across Europe. But the French invasion of Spain turned into a quagmire, with British regulars contesting Napoleon's control of the major cities, while the Spanish guerrillas successfully harassed his lines of communication. Here again, strategic coordination was achieved, but overall in different battlespaces.[12] Likewise, the American Civil War is framed by famous battles at Chancellorsville, Gettysburg, Vicksburg, and Antietam. Yet partisan warfare and famous units like John Mosby's 43[d] Virginia Cavalry provided less conventional capabilities as an economy of force operation.[13] T.E. Lawrence's role as an advisor to the Arab revolt against the Ottomans is another classic case of compound war, which materially assisted General Edmund Allenby's thrusts with the British Expeditionary Force against Jerusalem and Damascus. But here again, Lawrence's raiders did not fight alongside the British; they were strategically directed by the British and supplied with advisors, arms, and gold only.[14]

Vietnam is another classic case of the strategic synergy created by compound wars, posing the irregular tactics of the Viet Cong with the more conventional capabilities of the North Vietnamese army.[15] The ambiguity between conventional and unconventional approaches vexed military planners for several years. Even long afterward, Americans debated what kind of war they actually fought and lost.[16]

Hybrid wars

As difficult as compound wars have been, the operational fusion of conventional and irregular capabilities in hybrid conflicts may be even more complicated. Compound wars offered synergy and combinations at the strategic level, but not the complexity, fusion, and simultaneity we anticipate at the operational and even tactical levels in wars where one or both sides is blending and fusing the full range of methods and modes of conflict into the battlespace. Irregular forces in cases of compound wars operated largely as a distraction or economy of force measure in a separate theater or adjacent operating area including the rear echelon. Because it is based on operationally separate forces, the compound concept did not capture the merger or blurring modes of war identified in past case studies such as Hizballah in the second Lebanon war of 2006 or future projections.

Thus, the future does not portend a suite of distinct challengers into separate boxes of a matrix chart. Traditional conflict will still pose the most dangerous form of human conflict, especially in scale. With increasing probability, however, we will face adversaries who blur and blend the different methods or modes of warfare. The most distinctive change in the character of modern war is the blurred or blended nature of combat. We do not face a widening number of distinct challenges but their *convergence* into hybrid wars.

These hybrid wars blend the lethality of state conflict with the fanatical and protracted fervor of irregular warfare. In such conflicts, future adversaries (states, state-sponsored groups, or self-funded actors) will exploit access to modern military capabilities, including encrypted command systems, man-portable air-to-surface missiles, and other modern lethal systems, as well as promote protracted insurgencies that employ ambushes, improvised explosive devices (IEDs), and coercive assassinations. This could include states blending high-tech capabilities such as antisatellite weapons with terrorism and cyber warfare directed against financial targets.

Hybrid challenges are not limited to nonstate actors. States can shift their conventional units to irregular formations and adopt new tactics as Iraq's *fedayeen* did in 2003. Evidence from open sources suggests that several powers in the Middle East are modifying their forces to exploit this more complex and diffused mode of conflict. We may find it increasingly perplexing to characterize states as essentially traditional forces, or nonstate actors as inherently irregular. Future challenges will present a more complex array of alternative structures and strategies as seen in the battle between Israel and Hizballah in 2006. The latter effectively fused militia forces with highly trained fighters and antitank guided missile teams into the battle. Hizballah clearly demonstrated the ability of nonstate actors to study and deconstruct the vulnerabilities of Western-style militaries and devise appropriate countermeasures.

The lessons learned from this confrontation are already cross-pollinating with other states and nonstate actors. With or without state sponsorship, the lethality and capability of organized groups are increasing, while the incentives for states to exploit nontraditional modes of war are on the rise. This will require that we modify our mindsets with respect to the relative frequency and threats of future conflict. Irregular tactics and protracted forms of conflict are often castigated as tactics of the weak, employed by

nonstate actors who do not have the means to do anything else. Instead of weakness, future opponents may exploit such means because of their effectiveness, and they may come to be seen as *tactics of the smart and nimble*. The future may find further evidence that hybrid threats are truly effective against large, ponderous, and hierarchical organizations that are mentally or doctrinally rigid.

Some analysts in Israel have all too quickly dismissed the unique character of Hizballah. These analysts blithely focus inward on the failings of the political and military leadership.[17] This is a fatal disease for military planners, one that can only benefit future Hizballahs. As Winston Churchill so aptly put it, "However absorbed a commander may be in the elaboration of his own thoughts, it is sometimes necessary to take the enemy into account." So, too, must military historians and serious efforts to extract lessons from current history. Russell Glenn, a retired U.S. Army officer now with RAND, conducted an objective evaluation and concluded that the second Lebanon conflict was inherently heterogeneous and that attempts to focus on purely conventional solutions were futile. Moreover, as both Ralph Peters and I concluded earlier, this conflict is not an anomaly, but a harbinger of the future. As Glenn summed up in *All Glory Is Fleeting*, "Twenty-first century conflict has thus far been typified by what might be termed as *hybrid wars*."[18]

Implications

The rise of hybrid warfare does not represent the end of traditional or conventional warfare. But it does present a complicating factor for defense planning in the 21st century. The implications could be significant. John Arquilla of the Naval Postgraduate School has noted, "While history provides some useful examples to stimulate strategic thought about such problems, coping with networks that can fight in so many different ways—sparking myriad, hybrid forms of conflict—is going to require some innovative thinking."[19]

We are just beginning this thinking. Any force prepared to address hybrid threats would have to be built upon a solid professional military foundation, but it would also place a premium on the cognitive skills needed to recognize or quickly adapt to the unknown.[20] We may have to redouble our efforts to revise our operational art. We have mastered operational design for conventional warfare, and recently reinvigorated our understanding of counterinsurgency campaigns. It is not clear how we adapt our campaign planning to combinations of the two. What is the center of gravity in such conflicts, and does it invalidate our emphasis on whole-of-government approaches and lines of operations?

Success in hybrid wars also requires small unit leaders with decisionmaking skills and tactical cunning to respond to the unknown—and the equipment sets to react or adapt faster than tomorrow's foe. Organizational learning and adaptation would be at a premium, as would extensive investment in diverse educational experiences.[21] What institutional mechanisms do we need to be more adaptive, and what impediments does our centralized—if not sclerotic—Defense Department generate that must be jettisoned?

The greatest implications will involve force protection, as the proliferation of IEDs suggests. Our enemies will focus on winning the mobility-countermobility challenge to

limit our freedom of action and separate us from close proximity to the civilian population. The ability of hybrid challenges to exploit the range and precision of various types of missiles, mortar rounds, and mines will increase over time and impede our plans. Our freedom of action and ability to isolate future opponents from civilian populations are suspect.

The exploitation of modern information technology will also enhance the learning cycle of potential irregular enemies, improving their ability to transfer lessons learned and techniques from one theater to another. This accelerated learning cycle has already been seen in Iraq and Afghanistan, as insurgents appeared to acquire and effectively employ tactical techniques or adapt novel detonation devices found on the Internet or observed from a different source. These opponents will remain elusive, operate in an extremely distributed manner, and reflect a high degree of opportunistic learning.

The U.S. military and indeed the armed forces of the West must adapt as well. As one Australian officer put it, unless we adapt to today's protean adversary and the merging modes of human conflict, "we are destined to maintain and upgrade our high-end, industrial age square pegs and be condemned for trying to force them into contemporary and increasingly complex round holes."[22]

DOD recognizes the need for fresh thinking and has begun exploring the nature of this mixed challenge. An ongoing research project, including a series of joint wargaming exercises, has been initiated by the Office of the Secretary of Defense. U.S. Joint Forces Command is exploring the implications as well, and the Marines are doing the same. But the challenge affects all the Services, not just ground forces. Hizballah's use of long-range missiles, armed unmanned aerial vehicles, and antiship cruise missiles should be a warning to the whole joint community. The maritime Services understand this and reflected the new challenge in the national maritime strategy: "Conflicts are increasingly characterized by a hybrid blend of traditional and irregular tactics, decentralized planning and execution, and non-state actors, using both simple and sophisticated technologies in innovative ways."[23]

Tomorrow's conflicts will not be easily categorized into conventional or irregular. The emerging character of conflict is more complicated than that. A binary choice of big and conventional versus small or irregular is too simplistic. The United States cannot imagine all future threats as state-based and completely conventional, nor should it assume that state-based conflict has passed into history's dustbin. Many have made that mistake before. State-based conflict is less likely, but it is not extinct. But neither should we assume that all state-based warfare will be entirely conventional. As this article suggests, the future poses combinations and mergers of the various methods available to our antagonists.

Numerous security analysts have acknowledged the blurring of lines between modes of war.[24] Hybrid challengers have passed from a concept to a reality, thanks to Hizballah. A growing number of analysts in Washington realize that the debate about preparing for counterinsurgency or stability operations versus big wars is a false argument. Such a debate leads to erroneous conclusions about future demands for the joint warfighting community. Scholars at the Naval War College in Newport, Rhode Island, and at King's College, London, endorsed the concept.[25] Max Boot concluded his lengthy study of war and technology with the observation that

> *The boundaries between "regular" and "irregular" warfare are blurring. Even non-state groups are increasingly gaining access to the kinds of weapons that were once the exclusive preserve of states. And even states will increasingly turn to unconventional strategies to blunt the impact of American power.*[26]

This should widen our lens about the future joint operating environment. Yet our focus remains on an outmoded and dated bifurcation of war forms, and this orientation overlooks the most likely and potentially the most dangerous of combinations. One pair of respected strategists has concluded that "hybrid warfare will be a defining feature of the future security environment."[27] If true, we face a wider and more difficult range of threats than many in the Pentagon are thinking about. As today's Spartans, we will have to take the enemy's plans into consideration and adapt into a more multidimensional or joint force as Sparta ultimately did.

Today's strategists need to remember the frustrated Spartans outside Athens' long wall and remember the bloody success of the British, Russians, and Israelis in their long wars against hybrid threats—and prepare accordingly.

Notes

1 Robert B. Strassler, ed., *The Landmark Thucydides: A Comprehensive Guide to the Peloponnesian War* (New York: Free Press, 1996).
2 National Defense Strategy (Washington, DC: U.S. Department of Defense, 2005), 4.
3 Michael Evans, "From Kadesh to Kandahar: Military Theory and the Future of War," *Naval War College Review* (Summer 2003), 136.
4 Colin S. Gray, *Another Bloody Century: Future Warfare* (London: Weidenfeld & Nicolson, 2006).
5 *Countering Irregular Activity Within a Comprehensive Approach*, Joint Doctrine Note 2/07, United Kingdom, March 2007, 1–15.
6 Michael G. Krause, "Square Pegs for Round Holes?" Australian Army, Australian Land Warfare Studies Centre, Working Paper No. 132, June 2007.
7 John Arquilla, "The End of War As We Knew It," *Third World Quarterly* 28, no. 2 (March 2007), 369.
8 William. J. Nemeth, USMC, *Future War and Chechnya: A Case for Hybrid Warfare* (Monterey, CA: Naval Postgraduate School, June 2002).
9 James N. Mattis and Frank Hoffman, "Future Warfare: The Rise of Hybrid Warfare," *U.S. Naval Institute Proceedings* (November 2005), 30–32; F.G. Hoffman, "How the Marines Are Preparing for Hybrid Wars," *Armed Forces Journal International* (April 2006); and F.G. Hoffman, "Preparing for Hybrid Wars," *Marine Corps Gazette*, March 2007; Frank Hoffman, *Conflict in the 21st Century: The Rise of Hybrid Warfare* (Arlington, VA: Potomac Institute for Policy Studies, December 2007).
10 Thomas Huber, *Compound Wars: The Fatal Knot* (Fort Leavenworth, KS: Command and General Staff College, 1996).
11 John Grenier, *First Way of War: American War Making on the Frontier* (New York: Cambridge University Press, 2005); Terry Golway, *Washington's General: Nathanael Green and the Triumph of the American Revolution* (New York: Henry Holt, 2005).
12 Charles J. Esdaile, *Fighting Napoleon, Guerrillas, Bandits and Adventurers in Spain 1808–1814* (New Haven: Yale University Press, 2004), 154–155.
13 Jeffrey D. Wert, *Mosby's Rangers* (New York: Simon & Schuster, 1991).
14 B.H. Liddell Hart, *Lawrence of Arabia* (New York: De Capo, 1989).
15 Harold G. Moore and Joseph L. Galloway, *We Were Soldiers Once . . . and Young: Ia Drang—The Battle That Changed the War in Vietnam* (New York: Random House, 1992).
16 The best source on the war is Andrew F. Krepinevich, *The Army in Vietnam* (Baltimore: Johns Hopkins University Press, 1986).
17 Avi Kober, "The Israel Defense Forces in the Second Lebanon War: Why the Poor Performance," *Journal of Strategic Studies* (February 2008), 3–40.

18 Russell W. Glenn, *All Glory Is Fleeting: Insights from the Second Lebanon War* (Santa Monica, CA: RAND, 2008), 73.
19 Arquilla, 369.
20 David C. Gompert, *Heads We Win: The Cognitive Side of Counterinsurgency (COIN)* (Santa Monica, CA: RAND, Counterinsurgency Study Occasional Paper 1, 2007).
21 Michael Evans, *From the Long Peace to the Long War* (Canberra: Australian Defence College, 2007). See also David Betz, "A Real Revolution in Military Affairs," paper delivered at the Marine Corps Training and Education Command Conference, "Pedogology for the Long War," October 29–31, 2007, Quantico, VA.
22 Krause, v; David Betz, "Redesigning Land Forces for Wars Amongst the People," *Contemporary Security Policy* 28, no. 2 (August 2007), 221–243.
23 General James T. Conway, USMC, Admiral Gary Roughead, USN, and Admiral Thad W. Allen, USCG, *A Cooperative Strategy for 21st-Century Seapower* (Washington, DC: October 2007).
24 Thomas G. Mahnken, "Modern War," in *The Impenetrable Fog of War: Ref lections on Modern Warfare and Strategic Surprise*, ed. Patrick M. Cronin (Westport, CT: Praeger Security International, 2006), 15–24.
25 Mackubin T. Owens, "Reflections on Future War," *Naval War College Review* (Winter 2007); Colonel John J. McCuen, "Hybrid Wars," *Military Review* (April-May 2008), 107–113.
26 Max Boot, *War Made New: Technology, Warfare, and the Course of History, 1500 to Today* (New York: Random House, 2006), 472.
27 Michèle A. Flournoy and Shawn Brimley, "The Defense Inheritance: Challenges and Choices for the Next Pentagon Team," *Washington Quarterly* (Autumn 2008), 63. For additional background, see Greg Grant, "Hybrid Wars," *Government Executive* (May 2008); and Matthew Rusling, "For the Military, A Future of Hybrid Wars," *National Defense* (September 2008).

This page intentionally left blank

Part VI

Future warfare, future strategy

Introduction

No strategy Reader would be complete without a selection of essays about the problem of future warfare and the importance of strategic studies today.

In the first essay, Thomas G. Mahnken of the US Naval War College argues that the world is in the midst of a Revolution in Military Affairs (RMA) brought on by the growth and spread of precision-guided munitions. In recent decades, the United States has benefited considerably from its absolute advantage in precision weaponry. Now, however, the ability to strike with precision is spreading widely, including the development of so-called anti-access capabilities by China and Iran, but also through the proliferation of guided rockets, artillery rounds and mortars. Conflicts among belligerents armed with such weaponry are going to look considerably different from those of the recent past: they are likely to be more lethal and protracted, with less decisive outcomes.

Chinese defence analysts have also thought a great deal about the emerging RMA. In the second selection, Jacqueline Newmyer Deal of the Long Term Strategy Group examines their views. She argues that Chinese strategists see the emerging military revolution as a historic opportunity to alter the military balance with the United States. Key to Chinese conceptions of the RMA include complementary information and kinetic attacks, and the substitution of "information deterrence" for nuclear deterrence. However, Deal worries that in a future conflict Chinese leaders may underestimate their adversary's resilience and overestimate their own capabilities, to their detriment.

In the third essay, Tor Bukkvoll of the Norwegian Defense Research Establishment examines how Russian military thinkers are interpreting the changing character of war and its implications for Russia. During the late Cold War, Soviet military scientists were the first to argue that the development of information technology was leading to a revolution in warfare. However, the Soviet Union, and now Russia, has been slow to exploit that revolution. Bukkvoll delineates the contours of the debate within Russia over the role of technology in modern warfare, arguing that Russian defence intellectuals are divided into three schools of thought: the traditionalists, who argue for both technology and manpower; the modernists, who are willing to trade manpower for technology; and the revolutionaries, who emphasize technology over manpower. The interplay of these perspectives will shape the Russian military in coming years.

The fourth essay by Michael Evans of the Australian Defense College surveys the recent complex changes in world affairs and military affairs before offering a tentative

analysis of future trends. According to Evans, future war may be characterized by the almost simultaneous occurrence of conventional and unconventional and of symmetric and asymmetric modes of war, between states and/or between state and non-state actors, overlapping in time and space. Advanced warfare will largely be "joint service", in which domination of the "battle space" requires the concurrent and highly coordinated concentration of effort of each service. Battlefield manoeuvres will probably look more like large-scale "ambushes" than more orthodox encounter operations. Advanced states will probably deploy fewer troops, but the individual soldier will be much more lethal owing to networked surveillance and long-range precision-strike capabilities. Even so, the advent of precision-guided munitions will not replace the infantry in close battle, or artillery and armour to support them against scattered enemies. While the coming threats to Western societies are likely to be in the form of disruption rather than invasion, Evans advises, the vulnerability of advanced societies to such attacks "obliges defence experts and politicians to think rigorously about the kinds of war that might lie ahead".

Another trend in modern warfare is the extension of military operations to the cyber domain. The fifth selection, by Thomas Rid of King's College London, argues that war as defined by Clausewitz has not occurred and indeed cannot occur. Whereas war involves the use of force to compel an adversary to do one's will, cyber war does not involve force and therefore its ability to compel is limited. Rather, what is commonly referred to as "cyber war" may better be thought of as espionage and sabotage.

In the final essay in this volume, Hew Strachan of Oxford University argues that strategy has lost its meaning in contemporary usage. By tracing the changing definition of the word from its nineteenth-century origins to today, he illustrates how twentieth-century experiences of total war and cold war have eroded the distinction made by Clausewitz and other theorists between *policy* and *strategy*. This conceptual trend towards conflating policy and strategy has been driven forward since the end of the Cold War by a scholarly and professional preoccupation with the operational level of war, the notion that "war" is no more, and what Strachan describes as the "militarization" of foreign policy. This is not simply a scholarly concern about definitions, but a practical one about the respective roles of politicians and military professionals in an iterative process of dialogue in which military means are related to the policy ends. "Strategy is designed to make war useable by the state," Strachan argues, "so that it can, if need be, use force to fulfil its political objectives." The application of force requires concepts that are "robust because they are precise".

Study questions

1   Does the concept of "military revolutions" provide a useful guide to thinking about future warfare?
2   How may the spread of precision-strike systems alter the character of future wars?
3   In what ways do Chinese and Russian military analysts think differently about future wars than their counterparts in the West?
4   What impact has globalization had on contemporary warfare? Do you agree with Evans's future projections?

5   What insights can classical strategy provide to help us understand war in the cyber domain?
6   Has strategy lost its meaning?

Further reading

Adamsky, Dima P., "Through the Looking Glass: The Soviet Military-Technical Revolution and the American Revolution in Military Affairs", *Journal of Strategic Studies* 31, no. 2 (April 2008), 257–294.

Betts, Richard K., "Is Strategy an Illusion?", *International Security* 25, no. 2 (2000), 5–50.

Brun, Brigadier General Itai, "'While You're Busy Making Other Plans' – The 'Other RMA'", *Journal of Strategic Studies* 33, no. 4 (August 2010), 535–565.

Cheung, Tai Ming, "The Chinese Defense Economy's Long March from Imitation to Innovation", *Journal of Strategic Studies* 34, no. 3 (June 2011), 325–354.

Clarke, Ignatius Francis, *Voices Prophesying War: Future Wars 1763–3749* (Oxford: Oxford University Press, 1992).

Gray, Colin S., *Strategic Studies: A Critical Assessment* (London: Aldwych Press, 1982).

Imlay, Talbot C. and Monica Duffy Toft, *The Fog of Peace and War Planning: Military and Strategic Planning under Uncertainty* (London: Routledge, 2006).

Krepinevich, Andrew F., "Cavalry to Computer: The Pattern of Military Revolutions", *The National Interest* 37 (autumn 1994), 31–36.

Lee, Bradford A., "Winning the War but Losing the Peace? The United States and the Strategic Logic of War Termination", in Bradford A. Lee and Karl F. Walling (eds) *Strategic Logic and Political Rationality: Essays in Honor of Michael I. Handel* (London: Frank Cass, 2003), 249–273.

Loo, Bernard Fook Weng, "Decisive Battle, Victory and the Revolution in Military Affairs", *Journal of Strategic Studies* 32, no. 2 (April 2009), 189–211.

Mahnken, Thomas G., ed., *Competitive Strategies for the 21st Century: Theory, History, and Practice* (Palo Alto, CA: Stanford University Press, 2013).

Mirski, Sean, "Stranglehold: The Context, Conduct and Consequences of an American Naval Blockade of China", *Journal of Strategic Studies* 36, no. 3 (June 2013), 385–421.

Murray, Williamson and Allan R. Millett, eds, *Military Innovation in the Interwar Period* (New York: Cambridge University Press, 1996).

Peng Guangqian and Yao Youzhi, eds, *Science of Military Strategy* (Beijing: Military Science Publishing House, 2005).

Rosen, Stephen P., *Winning the Next War: Innovation and the Modern Military* (Ithaca, NY: Cornell University Press, 1991).

Yoshihara, Toshi and James R. Holmes, *Red Star Over the Pacific: China's Rise and the Challenge to U.S. Maritime Strategy* (Annapolis: US Naval Institute Press, 2010).

This page intentionally left blank

19 Weapons

The growth and spread of the precision-strike regime

Thomas G. Mahnken

For two decades, scholars and practitioners have argued that the world is experiencing a Revolution in Military Affairs (RMA) brought on by the development and diffusion of precision-strike and related capabilities, such as intelligence, surveillance, and reconnaissance; precision navigation and tracking; and robustly improved command and control. The United States took an early lead in exploiting the promise of precision-strike systems, and the use of precision weaponry has given the United States a battlefield edge for some twenty years. However, precision-strike systems are now spreading: other countries, and non-state actors, are acquiring them and developing countermeasures against them. As the precision-strike regime matures, the United States will see its edge erode. The ability of the United States to project power will diminish considerably. In addition, U.S. forces, and eventually the United States itself, will be increasingly vulnerable to precision weapons in the hands of our adversaries.

This essay begins by exploring the concept of an RMA as well as the general structure of military revolutions. Using this model, the essay then describes the growth of the precision-strike regime to date; speculates on the features of a mature precision-strike regime; and concludes with some implications for the United States.

The evolution of military technology and doctrine has redefined the conduct of war throughout history.[1] Defense policy analyst Andrew F. Krepinevich, for example, has identified ten military revolutions stretching back to the fourteenth century.[2] These include the Napoleonic revolution of the late eighteenth and early nineteenth centuries, which saw the advent of the mass army; the adoption of the railroad, rifle, and telegraph in the mid-nineteenth century, which marked the industrialization of warfare; and the development of nuclear weapons in the twentieth century. Although each revolution was unique in its origin, trajectory, and content, all shared common features. In each case, new combat methods arose that displaced previously dominant forms of warfare by shifting the balance between offense and defense, space and time, and fire and maneuver.[3] The states that first adopted these innovations gained a significant advantage, forcing competitors to match or counter them to have any chance of prevailing on the battlefield. Those who adapted, prospered, while those who did not, declined, often precipitously.

Military revolutions display a common structure: a cycle of innovation, diffusion, and refinement. Their development is driven not just by changes in the character and conduct of war, but also by the perceptions of both participants and observers that

change is afoot and drastic action is required. Indeed, the perception of dramatic change and the urgent need to respond to it is a defining feature of a military revolution. For example, although scholars debate whether something called *blitzkrieg* actually existed in German military doctrine, the demonstrated effectiveness of combined-arms armored warfare against France and the Low Countries in May and June 1940 convinced participant and observer alike that the character of warfare had shifted, and compelled them to respond by changing their force structure and doctrine.[4]

The Embryonic Phase. The first phase of a new revolution builds on the achievements of the preceding cycle, while the last phase forms the foundation of the next transformation. During the first, or embryonic, phase, military organizations refine old combat methods and experiment with new ones in an effort to gain or maintain advantage against potential adversaries.[5] Most major military innovations have, in fact, come about because of the perception of an operational or strategic problem that defied a conventional solution.

New weaponry alone is insufficient to transform warfare.[6] Those practices that have changed the character and conduct of warfare have combined weapon systems with innovative operational concepts and the organizations necessary to carry them out.[7] Yet determining how new weapons and concepts will perform without the test of war is exceedingly difficult. In peacetime, military organizations operate, in the words of military historian Sir Michael Howard, in "a fog of peace."[8] They must place bets about the effectiveness of new and unproven ways of war, but combat is the only, and final, arbiter. In addition, past experience serves as a cognitive anchor that limits the ability of military organizations to comprehend the magnitude of change that is under way and constrains the ability of intelligence organizations to understand foreign military developments.[9] As a result, periods of change in the character and conduct of warfare frequently witness a growing gap between perception and reality. The magnitude of this divergence depends on the amount of time that passes between wars and the amount of technological and doctrinal dynamism in the interwar period.

The Immature Phase. The second, or immature, phase of a military revolution begins with the successful use of new military practices in a major war. Success often takes the form of a decisive battle or campaign in which forces that have mastered new combat methods defeat those who remain wedded to traditional approaches. The demonstrated effectiveness of these methods realigns perception and reality, convinces belligerent and observer alike of a change in the character of warfare, and forces both friend and foe to adjust their force structure and doctrine. For example, revolutionary France's adoption of the *levée en masse* not only allowed it to survive, but also permitted Napoleon to win a series of decisive battles against his foes at Ulm, Austerlitz, Jena, and Auerstadt. Prussia's embrace of the railroad, rifle, and telegraph helped it, the least of Europe's great powers, defeat Austria at Königgrätz and France at Sedan and unify the German state. And Germany's use of combined-arms armored warfare delivered a series of quick decisive victories in the opening campaigns of World War II.

One way military organizations adjust to new combat methods is by emulating successful practices. Indeed, the spread of new capabilities offers the central mechanism by which one military regime supplants another. Military organizations may attempt to import foreign practices wholesale; more often, however, they modify them somewhat in the process.[10]

Adversaries may also attempt to develop countermeasures to new combat methods, particularly when the barriers to emulation are prohibitively high. As British Army officer and military historian J.F.C. Fuller put it, "[E]very improvement in armament is eventually met by a counter-improvement which gradually or rapidly whittles down its power."[11] Although technical and operational countermeasures rarely succeed in nullifying the effectiveness of new military practices, they do, over time, erode it somewhat.[12] The competition between measure and countermeasure becomes a defining feature of the ensuing military regime.

The process of emulation is typically neither rapid (let alone automatic) nor complete.[13] First, the process of change in military organizations is wrenching and painful, reducing their effectiveness in the short term even if it promises to increase it in the long term. As a result, military leaders tend to delay difficult change unless and until it is starkly apparent that it is necessary. Second, leaders may disagree in their perception of the threat environment, including debates over which contingencies are most serious and when they might arise. Third, the path to success is rarely obvious. Military organizations may have difficulty perceiving that a military revolution is under way even after new practices have appeared on the battlefield. Because new combat methods often have their roots in the past, contemporary observers may fail to discern what is new and different about them. Fourth, the organizational culture of the military can constrain both how it perceives the environment and how it responds.[14] Organizations may emphasize those events that are in accord with doctrine and discard those that contradict it.

The Mature Phase. The spread of successful practices creates a new style of warfare that supplants the existing paradigm. The inauguration of a new military regime marks the third, or mature, phase of a revolution. The basis for competition in a mature regime is different from that in a developing one. In the latter, advantage accrues to the military that is best able to exploit an emerging innovation; in the former, advantage accrues to those powers that are able to replicate an innovation on a large scale. Whereas a developing regime often witnesses wars of maneuver and quick, decisive victories, a mature regime is characterized by wars of attrition. For example, Germany used its early lead in developing combined-arms armored warfare to defeat Poland, France, and the Low Countries in the early phases of World War II. However, in an example of successful emulation, Germany was ultimately defeated by a coalition that was able to field far more tanks than the Germans were, and to use them reasonably well.[15]

The structure of military revolutions is easiest to discern in retrospect, with the benefit of hindsight once history has rendered its verdict. It is far more difficult to comprehend contemporary developments, not least because we are immersed in them. Nonetheless, we can cast our gaze backward to the origins of the precision-strike revolution, and we should look ahead to predict, albeit with a sense of modesty, its future course.

The embryonic phase of the precision-strike revolution stretched from World War II to the end of the Cold War. Guided weapons, including the V-1 cruise missile and V-2 ballistic missile, but also the Fritz X air-to-surface weapon, were first used in combat by Germany during World War II. However, the United States took the lead in developing precision weapons in the decades that followed.[16] Indeed, many of the weapon systems associated with the information revolution—precision-guided munitions (PGMs),

unmanned air vehicles (UAVs), and sensors—date back to the 1960s and 1970s, and many saw their debut in the Vietnam War. Between 1968 and 1973, for example, the Air Force and Navy expended more than 28,000 laser-guided bombs (LGBs) in Southeast Asia, mainly against bridges and transportation chokepoints.[17]

The seeming ease with which the U.S.-led coalition defeated Iraq during the 1991 Gulf War caused many observers in the United States and elsewhere to conclude that the information revolution was bringing about a new RMA.[18] In their view, the lopsided battles in the deserts of Kuwait and southern Iraq and the seemingly effortless domination of the Iraqi air force signaled that warfare had indeed changed. The contrast between prewar expectations of a bloody fight and the wartime reality of Iraqi collapse struck many as indicating a transformation in warfare.

The 1991 Gulf War thus marked the transition between the embryonic and immature phases of the precision-strike revolution. The combination of the stealthy F-117 *Nighthawk* aircraft and PGMs gave U.S. forces extremely high effectiveness. A typical non-stealth strike formation in the Gulf War required thirty-eight aircraft, including electronic warfare and defense suppression aircraft, to allow eight planes to deliver bombs on three targets. By contrast, only twenty F-117s armed with 2,000-lb LGBs were able simultaneously to attack thirty-seven targets in the face of more challenging defenses. As a result, although F-117s flew only 2 percent of the total attack sorties in the war, they struck nearly 40 percent of strategic targets, such as leadership and command and control facilities. In addition, the war witnessed the innovative use of PGMs to strike not only fixed strategic targets and hardened aircraft shelters, but also Iraqi tanks in revetments. On one night alone, 46 F-111F attack aircraft dropped 184 LGBs, which destroyed 132 Iraqi armored vehicles.[19] Despite the fact that PGMs accounted for only 8 percent of the bombs dropped over Kuwait and Iraq, televised scenes of U.S. aircraft bombing targets with precision, broadcast world-wide, became the most evocative images of the war.

In the years that followed, the war became a central reference point in debates over the hypothesis that an RMA was under way.[20] Some of the more breathless RMA advocates argued that the information revolution marked a complete break with the past. One 1993 report predicted: "The Military Technical Revolution has the potential fundamentally to reshape the nature of warfare. Basic principles of strategy since the time of Machiavelli . . . may lose their relevance in the face of emerging technologies and doctrines."[21] The authors of the Air Force's official study of the Gulf War were closer to the mark when they concluded, "The ingredients for a transformation of war may well have become visible in the Gulf War, but if a revolution is to occur someone will have to make it."[22]

The United States embraced precision weaponry in the decade that followed the Gulf War. Throughout the 1990s, the combination of stealth and precision-guided munitions gave U.S. air forces the ability to strike adversaries from the air with near impunity. In addition, airpower seemed uniquely suited to the types of conflicts in which the United States was involved: wars for limited aims, fought with partial means, for marginal interests. Airpower coupled with PGMs appeared to offer the ability to coerce Iraq, intervene in the Balkans, and retaliate against terrorist groups while avoiding the difficult decisions associated with a sustained commitment of ground forces.

The congressionally mandated 1997 Quadrennial Defense Review acknowledged the existence of an RMA and committed the department to transforming the U.S. armed forces. As Secretary of Defense William Cohen put it: "The information revolution is creating a Revolution in Military Affairs that will fundamentally change the way U.S. forces fight. We must exploit these and other technologies to dominate in battle."[23] That same year, the congressionally mandated National Defense Panel (NDP) argued even more strongly in favor of the need to transform U.S. forces. The panel's report suggested that an RMA was under way and urged the Defense Department leadership to "undertake a broad transformation of its military and national security structures, operational concepts and equipment, and . . . key business processes." The report stated:

> We are on the cusp of a military revolution stimulated by rapid advances in information and information-related technologies. This implies a growing potential to detect, identify, and track far greater numbers of targets over a larger area for a longer time than ever before, and to provide this information much more quickly and effectively than heretofore possible. Those who can exploit these advantages—and thereby dissipate the fog of war—stand to gain significant advantages . . . . [The Defense Department] should accord the highest priority to executing a transformation of the U.S. military, starting now.[24]

Much of the discussion of the RMA in the 1990s was predicated on opportunity: the United States should pursue new ways of war because they would allow it to win wars faster, cheaper, and more decisively. Characteristic of this view was defense analyst James Blaker's statement: "The potency of the American RMA stems from new military systems that will create, through their interaction, an enormous military disparity between the United States and any opponent. Baldly stated, U.S. military forces will be able to apply military force with dramatically greater efficiency than an opponent, and do so with little risk to U.S. forces."[25]

The confidence, even hubris, of the 1990s permeated the U.S. officer corps. Officers in the late 1990s perceived the benefits of transformation, but refused to believe that adversaries could acquire precision-strike capabilities themselves. A survey of 1,900 U.S. officers attending professional military education institutions conducted in 2000 found that most tended to believe that the emerging RMA would make it easier for the United States to use force in order to achieve decisive battlefield victories. Most also believed that it would allow the United States to engage in high-intensity operations with substantially reduced risk of casualties and that it would greatly reduce the duration of future conflicts. They also tended to believe that the United States would have a greatly enhanced ability to locate, track, and destroy enemy forces in limited geographic areas.[26] By contrast, these same officers were skeptical of the ability of potential adversaries to exploit the precision-strike revolution to harm the United States. For example, only 9 percent of officers surveyed in 2000 believed that future adversaries would be able to use long-range precision-strike weapons such as ballistic and cruise missiles to destroy fixed military infrastructure, including ports, airfields, and logistical sites; only 12 percent believed they would be able to use such weapons to attack carrier battle groups at sea.[27]

The 1999 war over Kosovo saw the introduction of a new generation of PGMs guided by data from the Global Positioning System (GPS) satellite constellation, most notably the GBU-31 Joint Direct Attack Munition (JDAM). The weapon consists of a $20,000 kit, including a GPS receiver, sensors, and tailfins, that converts an unguided bomb into a guided weapon. In contrast with the LGBs used in Vietnam and the Gulf War, such weapons allow aircraft to strike at night and through inclement weather. The Kosovo war also saw the use of UAVs, such as the Air Force RQ-1A *Predator*, for reconnaissance and surveillance.

At the dawn of the new millennium, however, concern mounted that the precision-strike revolution, once an American monopoly, was on the verge of spreading. Of particular concern was China's development of so-called anti-access/area-denial capabilities. Reflecting this concern, the 2001 *Quadrennial Defense Review*, issued in the wake of the September 11, 2001, terrorist attacks, argued that the Defense Department's transformation efforts should focus on overcoming six emerging strategic and operational challenges:

- Protecting critical bases of operations, including the U.S. homeland, forces abroad, allies, and friends, and defeating weapons of mass destruction and their means of delivery;
- Assuring information systems in the face of attack and conducting effective information operations;
- Projecting and sustaining U.S. forces in distant anti-access or area-denial environments and defeating anti-access and area-denial threats;
- Denying enemies sanctuary by providing persistent surveillance, tracking, and rapid engagement with high-volume precision strike against critical mobile and fixed targets;
- Enhancing the capability and survivability of space systems and supporting infrastructure; and
- Leveraging information technology and innovative concepts to develop an interoperable, joint C4ISR architecture and capability that includes a joint operational picture that can be tailored to user needs.[28]

This shift was reflected in officer attitudes. In 2000, the vast majority of officers had been unconcerned about the full spectrum of threats; those surveyed in 2002 and 2006 expressed obvious concern about a range of future threats over the next two decades. Officers now worried about the threat from long-range precision-strike missiles with respect to current platforms and deployment schemes, with 69 percent of officers surveyed in 2002 and 2006 predicting that within a decade, adversaries would be able to use ballistic and cruise missiles to deny the United States the use of ports, airfields, and logistical sites. Similarly, 73 percent of officers surveyed in 2002 and 68 percent in 2006 believed that within a decade, adversaries would be able to use such weapons to attack carrier battle groups at sea.[29]

Between 1991 and 2003, PGMs grew from a niche capability to represent a new standard of warfare. Whereas 8 percent of the munitions employed during the Gulf War were guided, 29 percent of those used over Kosovo eight years later, 60 percent of those

used in Afghanistan ten years later, and 68 percent of those used in Iraq twelve years later were guided. In Afghanistan, the JDAM became the weapon of choice for U.S. forces. Between October 2001 and February 2002, U.S. forces dropped 6,600 of the munitions; during just one ten-minute period on October 18, 2001, the Air Force dropped a hundred of the bombs. Two years later in Iraq, U.S. forces dropped more than 6,500 JDAMs in the march on Baghdad.[30]

Precision weaponry has also assumed an important role in the panoply of weapons to combat terrorism. The decision to arm the *Predator* UAV and use it against Al Qaeda came in 2000, and the weapon was quickly pressed into use after the September 11, 2001, terrorist attacks. In November 2002, an AGM-114A *Hellfire* air-to-surface missile launched by a *Predator* destroyed a car carrying six terrorists, including Salim Sinan al-Harethi, Al Qaeda's chief operative in Yemen and a suspect in the October 2000 bombing of the destroyer USS *Cole*. Most of the strikes that followed targeted Pakistan's lawless border region. Begun by the George W. Bush administration, the program has reportedly been expanded by the Obama administration. According to one estimate, U.S. drones, including the *Predator* and the more powerful MQ-9 *Reaper*, have carried out more than 150 strikes in Pakistan since 2008, killing a number of senior Al Qaeda leaders as well as Baitullah Meshud, the head of the Pakistani Taliban. More controversial has been the death toll among innocents resulting from the attacks, but these deaths appear to be declining dramatically even as the number of strikes has increased, in part due to the deployment of new munitions with an even smaller warhead than that on the *Hellfire*.[31]

Despite—or, in fact, because of—America's success in embracing the precision-strike revolution, the United States is losing its military edge. Adversaries are acquiring PGMs, as well as the vital supporting capabilities needed to wage precision warfare, including commercial sources of imagery, precision navigation and timing, and upgraded command and control. Moreover, states are developing the ability to counter U.S. precision-strike capabilities by hardening, concealing, and dispersing their forces and infrastructure. We are, in other words, currently experiencing the maturation of the precision-strike revolution and the emergence of the precision-strike regime.

A growing number of actors are acquiring PGMs. These include not only U.S. allies, but also competitors such as China, which has become a leading player in the precision-strike regime. Unconstrained by the Intermediate-Range Nuclear Forces (INF) Treaty, which prevents the United States and Russia from deploying land-based intermediate-range missiles, China has become the world leader in precision-guided ballistic missiles. According to unclassified Defense Department estimates, China has deployed more than one thousand precision-guided conventional ballistic missiles opposite Taiwan. Moreover, it is preparing to field an anti-ship ballistic missile capable of striking ships at sea up to 1,500 km from China.[32] Nor are states any longer the only actors in the precision-strike revolution. For example, Lebanese Hezbollah used anti-tank guided missiles against Israeli forces in its 2006 war with Israel.[33] More recently, Hamas used such a weapon against an Israeli school bus.

We should not be surprised by the spread of precision-strike capabilities. It was historically inevitable, even if the process has been accelerated by the commercial availability of key supporting capabilities, such as imagery and command and control.

Of greatest significance, however, is the universal free access to precision navigation and timing data, such as that from the U.S. GPS satellite constellation. Whereas the development of precision guidance cost the United States billions of dollars over the course of decades, both states and non-state actors can now strike accurately with a minimum investment.

As other states are increasing their precision-strike capabilities, the United States is devoting less attention to precision strike than it has in the past. Rather, for the last half-decade the Defense Department has focused on countering insurgency in Iraq and Afghanistan—conflicts where precision strike plays a role, to be sure, but not a central one.

Meanwhile, both states and non-state actors, such as insurgents and terrorists, are seeking to counter U.S. precision-strike capabilities. Insurgents in Afghanistan and Pakistan, for example, have sought to camouflage themselves and hide among the local population. They have also sought to constrain the ability of the United States to bring airpower to bear by falsifying the number of innocents who have been killed in air strikes.[34]

If history is a guide, the future scope and spread of the precision-strike regime will be uneven. The ability of states and non-state actors to deploy an effective precision-strike capability will depend on their ability not only to field weapons, but also to develop or buy the command and control and intelligence, surveillance, and reconnaissance capabilities that are needed to strike with precision as well as to develop appropriate doctrine and operational concepts for their use. They will also seek ways to circumvent our precision-strike capability.

At the strategic level, states and non-state actors alike will be driven to adopt some combination of precision-strike and adaptive countermeasures. At the operational level, the interaction between the development of precision-strike systems, on the one hand, and attempts to protect against them, on the other, will drive the maturation of the precision-strike regime. Precision-guided weapons are putting an expanding range of targets at risk. It is already possible to effectively strike targets that were previously invulnerable. That trend is likely to continue. At the same time, the emergence of precision-strike systems is already leading adversaries to try to protect targets by making them mobile, as well as hardening, burying, defending, camouflaging, or concealing them.

Over time, this offense-defense interaction will render some targets difficult, if not impossible, to strike. Mobile weapons based deep in a nation's territory, deployed in the deep oceans or underwater, and located at great distances from attackers may remain for all intents and purposes invulnerable. More broadly, military forces will adopt measures to reduce their vulnerability. However, some targets cannot be buried or made mobile and will thus remain vulnerable. These will include civilian infrastructure such as electrical power distribution and oil refineries, but also military infrastructure, such as ports, bases, and logistical depots. Because of the enduring asymmetry between strike and protection, long-range precision-strike campaigns could increasingly come to target an adversary's vulnerable homeland infrastructure rather than his less vulnerable armed forces. Indeed, the twenty-first century may witness the resurrection, or transfiguration, of doctrines of strategic bombing, such as those that Italian Army General Giulio Douhet

espoused at the beginning of the twentieth century, and theories of coercion, such as those economist and strategist Thomas Schelling advanced during the Cold War.

In a world where many states possess precision-strike systems, traditional conquest and occupation will become much more difficult. They may, in fact, become prohibitively expensive in some cases. Imagine, for example, if the Iraqi insurgents had been equipped with precision-guided mortars and rockets and had reliably been able to target points within Baghdad's Green Zone. Or imagine that the Taliban were similarly armed and were thus able to strike routinely the U.S. and Afghan forward operating bases that dot the Afghan countryside. U.S. casualties could have amounted to many times what they have been in either theater.

Because invasion and conquest are becoming increasingly difficult, wars in a mature precision-strike regime will likely focus on coercion and limited political objectives. In this world, the ability to punish an adversary to force him to concede—what Thomas Schelling dubbed the "power to hurt"—is likely to become an increasingly popular theory of victory.[35] One potential result of this strategic interaction would be conflicts that involve campaigns whereby each side uses precision-strike weapons to hold the other's economic and industrial infrastructure at risk. In such a situation, stability would depend on each side possessing an assured survivable retaliatory capability. Unlike the condition of mutual assured destruction that obtained during the Cold War, however, this retaliatory capability could be based on precision-strike systems rather than nuclear weapons.

A mature precision-strike regime would feature a new set of "haves" and "have-nots," with an actor's status determined by the robustness of its precision-strike capability rather than other attributes, such as the possession of nuclear weapons. The precision-strike haves will be those countries that possess both geographic depth as well as the resources to invest in survivable, effective precision-strike systems. They will likely include the United States, China, India, and potentially Russia. The precision-strike have-nots will be those countries that are threatened by precision-strike systems but that lack the geographic depth or resources to invest in a survivable, effective precision-strike capability, such as Japan and Taiwan. These states will have incentives to invest in other forms of warfare, such as nuclear weapons.

The growth and diffusion of precision-strike systems could also affect international relations more broadly. To the extent that U.S. military power in general, and power projection in particular, has underpinned global norms, the emergence of anti-access capabilities could undercut world order. For example, the development and diffusion of anti-access systems could undermine the principle of freedom of navigation. In other cases, actors could seek to limit precision-strike capabilities. It is not inconceivable, for example, that states or non-state actors could seek to curb precision-strike systems through an international treaty, much as land mines have been limited. Amnesty International has already decried the U.S. drone campaign over Pakistan, and the United Nations Special Rapporteur on Extrajudicial Killings, Philip Alston, has condemned it and called for greater "accountability" to prevent what he called a "slippery slope" of killing.[36] Future attempts to proscribe the use of such unmanned systems are not beyond the realm of possibility.

Precision-strike systems are already affecting expectations regarding the use of force, and that trend is likely to continue. The ability of weapons to destroy targets reliably and

accurately has fostered the notion in many countries that war is a bloodless and error-free undertaking. In such an environment, targeting errors—the U.S. strike on the Chinese embassy in Belgrade in 1999, for instance—are likely to be perceived as deliberate acts.

The advent of precision strike and UAVs has separated warriors mentally and physically from the act of killing. Dropping unguided weapons required considerable skill to ensure that the bomb struck near (let alone on) the target. Delivering LGBs similarly required the operator to designate the target with a laser and keep it illuminated throughout the bomb's flight, a process that took seconds. Delivering a GPS-guided bomb merely requires the operator to input the target's coordinates into a computer. Similarly, UAV operators are physically removed from combat. The pilots who operate *Predators* and *Reapers* launching missiles over Pakistan are as far distant from the battlefield as Creech Air Force Base in Nevada. They report for work and routinely locate, identify, and track terrorists; sometimes they fire missiles and kill them. They then leave work and return home to their families at the end of every shift. This arrangement represents a profound change in the relationship between the warrior and warfare, one whose implications are only now beginning to play out.

The emergence of a mature precision-strike regime is likely to have dramatic consequences for the United States. Since the end of World War II, the United States has based its defense strategy on a combination of forward-based forces to deter adversaries and reassure allies and friends and the projection of power from those bases and the continental United States to defeat foes in wartime. The spread of precision-strike systems will call that formula into question.

U.S. bases are increasingly under threat of precision-strike systems. For example, some U.S. bases in the western Pacific are now within range of Chinese precision-guided conventional ballistic missiles; others will come in range as China deploys longer-range weapons. Over time, the vulnerability of these bases will undermine the deterrence of aggressors and reassurance of allies.

The threat to U.S. forward bases, in turn, calls into question the model that the United States has relied on for power projection in recent decades. Without access to ports and airfields in Saudi Arabia and across the Persian Gulf region, for example, it would have become considerably more difficult for the U.S.-led coalition to eject Iraqi forces from Kuwait in 1991. A future campaign against an adversary armed with precision-guided missiles, rockets, and mortars may more closely resemble the Normandy invasion and Iwo Jima than the relatively unopposed attacks on Iraq and Afghanistan.

Finally, over time it is likely that states will be able to strike the U.S. homeland with precision-strike systems, offering them a way to attack the United States directly. This threat could further increase the cost of U.S. intervention overseas and potentially offer adversaries a way to coerce the United States without resorting to the use of nuclear weapons.

However it manifests itself, the emergence of a mature precision-strike regime is likely to result in a pattern of conflict that will differ considerably from that of recent decades. The United States will no longer be able to rely on its absolute superiority in precision strike for battlefield advantage. To compete, the United States will have to seek new sources of comparative advantage. Ironically, it may also have to revert increasingly to

its nuclear arsenal to deter not only nuclear attacks, but also strikes from precision-guided non-nuclear weapons. Here as in other areas, old ideas may reappear in new form as the revolution matures.

Notes

1 See Bernard Brodie, "Technological Change, Strategic Doctrine, and Political Outcomes," in *Historical Dimensions of National Security Problems*, ed. Klaus Knorr (Lawrence: University Press of Kansas, 1976); J.F.C. Fuller, *Armament and History: A Study of the Influence of Armament on History from the Dawn of Classical Warfare to the Second World War* (London: Eyre & Spottiswoode, 1946); Karl Lautenschäger, "Technology and the Evolution of Naval Warfare," *International Security* 8 (2) (Fall 1983); William H. McNeill, *The Pursuit of Power: Technology, Armed Force, and Society Since AD 1000* (Chicago: University of Chicago Press, 1982); Jeremy Black, *A Military Revolution? Military Change and European Society, 1550–1800* (London: Macmillan, 1991); Geoffrey Parker, *The Military Revolution*, 2nd ed. (Cambridge: Cambridge University Press, 1996); Clifford J. Rogers, ed., *The Military Revolution Debate: Readings on the Military Transformation of Early Modern Europe* (Boulder, Colo.: Westview Press, 1995); Keith L. Shimko, *The Iraq Wars and America's Military Revolution* (Cambridge: Cambridge University Press, 2010), chap. 1.
2 Andrew F. Krepinevich identifies the following military revolutions: (1) the infantry revolution of the first half of the fourteenth century; (2) the artillery revolution of the early to mid-fifteenth century; (3) the revolution of sail and shot that stretched from the sixteenth century to the mid-seventeenth century; (4) the fortress revolution of the sixteenth century; (5) the gunpowder revolution of the seventeenth century; (6) the Napoleonic revolution of the late eighteenth and early nineteenth centuries; (7) the land warfare revolution that stretched from the mid-nineteenth century to the early twentieth century; (8) the naval revolution that stretched from the mid-nineteenth century to the early twentieth century; (9) the interwar revolutions in mechanization, aviation, and information of the early twentieth century; and (10) the nuclear revolution of the mid-twentieth century. Andrew F. Krepinevich, "Cavalry to Computer: The Pattern of Military Revolutions," *The National Interest* 37 (Fall 1994): 31–36.
3 Eliot A. Cohen, "A Revolution in Warfare," *Foreign Affairs* 75 (2) (March/April 1996): 43–44.
4 See, for example, Rolf Hobson, "Blitzkrieg, the Revolution in Military Affairs and Defense Intellectuals," *The Journal of Strategic Studies* 33 (4) (August 2010): 625–643.
5 There is a considerable literature on the issue of military innovation. See Adam Grissom, "The Future of Military Innovation Studies," *The Journal of Strategic Studies* 29 (5) (October 2006): 905–934; Barry R. Posen, *The Sources of Military Doctrine: France, Britain, and Germany Between the World Wars* (Ithaca, N.Y.: Cornell University Press, 1984); Stephen Peter Rosen, "New Ways of War: Understanding Military Innovation," *International Security* 13 (1) (Summer 1988); Stephen Peter Rosen, *Winning the Next War: Innovation and the Modern Military* (Ithaca, N.Y.: Cornell University Press, 1991); Kimberly Marten Zisk, *Engaging the Enemy: Organizational Theory and Soviet Military Innovation, 1955–1991* (Princeton, N.J.: Princeton University Press, 1993).
6 The Napoleonic revolution, for example, was not brought about by technological innovation, nor did it involve new weaponry. See Peter Paret, "Revolutions in Warfare: An Earlier Generation of Interpreters," in *National Security and International Stability*, ed. Bernard Brodie, Michael D. Intriligator, and Roman Kolkowicz (Cambridge: Oelgeschlager, Gunn, and Hain, 1983), 158.
7 See, for example, the cases in Williamson Murray and Allan R. Millett, eds., *Military Innovation in the Interwar Period* (New York: Cambridge University Press, 1996).
8 Michael Howard, "Military Science in an Age of Peace," *Journal of the Royal United Services Institute for Defence Studies* 119 (1) (March 1974): 4.
9 Anchoring occurs when the mind uses a natural starting point as a first approximation to a judgment. It modifies this starting point as it receives additional information. Typically, however, the starting point serves as an anchor that reduces the amount of adjustment, so that the final estimate remains closer to the starting point than it ought to be. Amos Tversky and Daniel Kahneman, "Anchoring and Calibration in the Assessment of Uncertain Quantities," *Oregon Research Institute Research Bulletin* 12 (1972).
10 Everett M. Rogers, *Diffusion of Innovations*, 3rd ed. (New York: Free Press, 1983), 175.
11 Fuller, *Armament and History*, 143.

12 *Jeune école* tactics did not, for example, displace the battleship as the centerpiece of naval warfare. Nor have anti-tank weapons made the tank obsolete. Instead, in each case the development of countermeasures triggered responses that restored the effectiveness of the practice that was being countered. See Edward N. Luttwak, *Strategy: The Logic of War and Peace* (Cambridge, Mass.: Belknap Press of Harvard University Press, 1987), 27–39; Robert L. O'Connell, *Of Arms and Men: A History of War, Weapons and Aggression* (New York: Oxford University Press, 1989), 7–9; Michael Vlahos, "A Crack in the Shield: The Capital Ship Under Attack," *Journal of Strategic Studies* 2 (1) (May 1979).

13 Emily O. Goldman and Leslie C. Eliason, eds., *Adaptive Enemies, Reluctant Friends: The Impact of Diffusion on Military Practice* (Stanford, Calif.: Stanford University Press, 2003).

14 See, for example, Thomas G. Mahnken, *Technology and the American Way of War since 1945* (New York: Columbia University Press, 2008); Thomas G. Mahnken, *Uncovering Ways of War: U.S. Military Intelligence and Foreign Military Innovation, 1918–1941* (Ithaca, N.Y.: Cornell University Press, 2002).

15 Thomas G. Mahnken, "Beyond Blitzkrieg: Allied Responses to Combined-Arms Armored Warfare During World War II," in *Adaptive Enemies, Reluctant Friends*, ed. Goldman and Eliason.

16 Barry D. Watts, *Six Decades of Guided Munitions and Battle Networks: Progress and Prospects* (Washington, D.C.: Center for Strategic and Budgetary Assessments, 2007).

17 Mahnken, *Technology and the American Way of War*, 115.

18 See, for example, William J. Perry, "Desert Storm and Deterrence," *Foreign Affairs* 70 (4) (Fall 1991): 66–82; Krepinevich, "Cavalry to Computer"; and Cohen, "A Revolution in Warfare."

19 Mahnken, *Technology and the American Way of War*, 169, 171.

20 Shimko, *The Iraq Wars and America's Military Revolution*, 23.

21 Michael J. Mazarr et al., *The Military Technical Revolution: A Structural Framework* (Washington, D.C.: Center for Strategic and International Studies, 1993), 28.

22 Thomas A. Keaney and Eliot A. Cohen, *Gulf War Air Power Survey Summary Report* (Washington, D.C.: Department of the Air Force, 1993), 251.

23 William S. Cohen, *Report of the Quadrennial Defense Review* (Washington, D.C.: Department of Defense, 1997), iv.

24 *Transforming Defense: National Security in the 21st Century* (Arlington, Va.: National Defense Panel, December 1997).

25 James R. Blaker, "The American RMA Force: An Alternative to the QDR," *Strategic Review* (Summer 1997): 22.

26 Thomas G. Mahnken and James R. FitzSimonds, *The Limits of Transformation: Officer Attitudes Toward the Revolution in Military Affairs* (Newport, R.I.: Naval War College Press, 2003), chap. 6.

27 Ibid., chap. 7.

28 *2001 Quadrennial Defense Review Report* (Washington, D.C.: Department of Defense, 2001), 30.

29 James R. FitzSimonds and Thomas G. Mahnken, "Officer Attitudes Toward Transformation, 2000–2006," paper presented at the Annual Meeting of the International Studies Association, March 24, 2006, San Diego, California.

30 Mahnken, *Technology and the American Way of War*, 200, 209.

31 Brian Glyn Williams, "The CIA's Covert Predator Drone War in Pakistan, 2004–2010: The History of an Assassination Campaign," *Studies in Conflict and Terrorism* 33 (10) (October 2010): 871–892; "A New Weapon in the War on Terror," *Newsweek* blog, http://www.newsweek.com/blogs/declassified/2010/09/10/a-new-weapon-in-the-war-on-terror.html (accessed December 9, 2010).

32 *Military and Security Developments Involving the People's Republic of China* (Washington, D.C.: Department of Defense, 2010).

33 Lieutenant Colonel Scott C. Farquar, *Back to Basics: A Study of the Second Lebanon War and Operation CAST LEAD* (Fort Leavenworth, Kans.: Combat Studies Institute Press, 2009).

34 Williams, "The CIA's Covert Predator Drone War in Pakistan," 880–882.

35 Thomas C. Schelling, *Arms and Influence* (New Haven, Conn.: Yale University Press, 1966), 2.

36 Williams, "The CIA's Covert Predator Drone War in Pakistan," 881–882.

20 The revolution in military affairs with Chinese characteristics

Jacqueline Newmyer Deal

Introduction: variation in RMA perspectives

For defense strategists and international relations theorists alike, a fundamental change in the behavior of military organizations and the conduct of war raises the question of which states or actors are best positioned to benefit. It has been demonstrated that the Soviet Union saw the current revolution in military affairs (RMA) as delivering a major advantage to the United States. This article argues that a traditional Chinese strategic outlook emphasizing superior information, intelligence, and the manipulation of perceptions to prepare the battlefield in peacetime shapes the People's Republic of China's (PRC's) approach to the RMA. The advances in computing and communications and the fundamental shift in strategic affairs associated with the RMA therefore provide China, at least in Beijing's eyes, with an opportunity to benefit disproportionately relative to its rivals. A related finding is that the current environment differs fundamentally from the Cold War context in which the RMA first emerged.[1]

The specter of a confrontation between NATO and Warsaw Pact forces in Europe formed the backdrop for the developments associated with the Soviet identification in the mid- to late-1970s of an American-led 'military-technical revolution', subsequently known as the RMA or simply 'military revolution' in the United States.[2] This fact may constitute the lone point of agreement within a set of lively RMA debates among strategic studies scholars and students of the Cold War. In particular, notwithstanding controversies about the existence, definition, significance, and future of the RMA,[3] its documentary origins have been traced to the Soviet observation that the United States was exploiting developments in computer processing and other technologies to achieve a 'reconnaissance-strike complex' (RSC) capable of targeting Soviet forces based deep in the rear. While it is clear that the Soviet and American defense establishments exhibited significant variation in the degree to which, and the ways in which, they conceptualized and employed the RMA,[4] the record shows that doctrinal developments in the United States and the USSR were rather tightly coupled in the period of the RMA's birth, with the US AirLand Battle doctrine a clear response to the Soviet echelons approach. By the mid- to late-1970s, the United States and the USSR shared a perspective on what would be the dominant engagement if their competition devolved into a hot war. Their approaches, while different, did proceed from a common point of departure.

Today, by contrast, the nature of the dominant engagement, and even the existence of a competition between the United States and China are disputed. Turning to Chinese writings on the RMA promises to shed some light on why this may be the case.

Chinese writings on the RMA: imitation is the sincerest form of flattery?

What is the Chinese conception of the RMA (*xin junshi geming*, new military revolution, or *junshi geming*, military revolution)? A logical first approach to the question would be to investigate the prevailing way of defining the RMA in the PRC. This is no mean task considering the various definitions and understandings within the United States and elsewhere around the world. The task is further complicated by the fact that People's Liberation Army (PLA) strategists who write in the journals of the Chinese Academy of Military Science and National Defense University, among other outlets, tend to follow international military thought closely, as they have inherited a strategic outlook that emphasizes 'knowing the enemy' and carefully monitoring trends, as will be discussed in further detail below. For instance, one of the leading Chinese writers on the RMA, Major General (ret.) Wang Baocun, is also a translator of Paul Kennedy's *Rise and Fall of the Great Powers*.[5]

Perusing Chinese military journals and edited volumes from the 1980s and 1990s yields an impressive array of definitions that seem to mimic lines from Russian and American sources – lines that emphasize organizational and doctrinal shifts associated with technological advances allowing for dramatically enhanced reconnaissance and precision at increasing ranges. The PLA watched and learned from a distance as the United States employed new RMA capabilities first in Operation 'Desert Storm' and then in the wars in the Balkans in the 1990s. The Chinese were reading Marshal Nikolai Ogarkov's work, studies commissioned by the US Office of Net Assessment, and other Western analysis,[6] and in many cases it is difficult to discern whether they added a particular gloss of their own to the foreign assessments.

But in this period, one can also find articles emphasizing the new vulnerabilities and opportunities for information warfare (IW, or *xinxi zhan*, alternately translated as informatized or informationalized [*xinxi hua*] war) created by the reliance of militaries, as well as broader social and economic systems, on computer networks. These discussions seem to reflect unique Chinese contributions, or a unique synthesis of Russian and American writings that ends up looking like neither.

Consider, for instance, this article by then-Senior Colonel Wang Baocun, published in the *PLA Daily* newspaper in April 1998, worth quoting at length:

> The opportunity created by the new military revolution is a chance of a lifetime. Our army enjoys many favorable conditions for informatization. Our country has achieved rapid progress in informatization and has the basic 'potential energy' to extend this work to the military. An important feature of the present military revolution is that local informationization begins sooner and develops faster than in the armed forces and is technologically more advanced. After building sufficient

'potential energy', the work will then be extended to the military and will trigger off an enormous military transformation. . . .[7]

The author goes on to state that 'unlike nuclear and stealth technologies, information technology has greater potential for diffusion and penetration and is not easy to keep secret'. The article then describes the dual-use character of most information technologies and concludes by arguing that because the value of information technologies lies in connections, the flow of valuable technological know-how is 'swift' and 'unstoppable'. The Chinese military will benefit from this through absorbing advances generated in other countries.[8]

While some of the arguments about the Internet and characteristics of the RMA in this piece overlap with points made in a 1996 *Foreign Affairs* article by Eliot Cohen,[9] Wang's method of exposition and the conclusions he draws for China are *sui generis*. Without articulating a threat or raising cause for alarm, he has pointed out that the PLA is positioned to appropriate the fruits of research and development in other countries and thereby to 'leap' into a dominant military position.[10] Indeed, the goal of reaping competitive benefits from open trade and technology flows creates an imperative to re-assure the United States and other militarily advanced states. Hence the omission of any specific platforms, either American or desired Chinese, in favor of statements like this:

> During the Eighth Five-Year Plan period, China's telephone switching capacity increased by 58.99 million lines, bringing the total interoffice switching capacity to 71 million lines and the total switching capacity of urban and rural telephones to 85.10 million lines. China thus became a country with one of the largest telephone networks in the world.

And this: 'If we take the matter lightly and let the opportunity slip past, we will once again be discarded by history when developed countries have completed their work . . .'. To prevent the abstract language and invocation of China's historical deficits from distracting us from the PLA's practical efforts to leapfrog, it helps to keep in mind what China was pursuing in the way of capabilities at the time. For instance, in the years running up to Wang's publication, the periodical *Naval and Merchant Ships* (*Jianchuan Zhishi*), published by the Chinese Society of Naval Architecture and Engineering (CSNAME), a major Chinese shipbuilding concern, had run a series of articles on tech-nical aspects of naval operations ranging from the uses of infrared sensors on naval attack planes and helicopters and methods for jamming anti-ship missiles to anti-submarine warfare (ASW) acoustics, various types of sonar arrays, and stealth casings for torpedoes to defeat sonar.[11]

Another, complementary piece from a different source – the journal of the Chinese Institute for Contemporary International Relations (CICIR), an arm of the PRC's intelligence/counterintelligence apparatus – is also worth citing at length, as these two articles seem to be representative of the open-source Chinese RMA literature. This excerpt begins with the author's third point, following a discussion of how the increased transparency of political actions has reduced the scope of warfare (point one) and its destructiveness (point two), which may again be taken as a form of reassurance:

3. Transformation from nuclear deterrence to information deterrence

Traditional deterrence theory is mainly nuclear deterrence theory. Nuclear weapons are capable of enormous destruction far exceeding that of conventional weapons. Thus, nuclear weapons can produce a huge social and psychological reaction, and they have a unique deterrent effect. The core of nuclear deterrence theory is to 'use the non-use' of nuclear power as a means to force an enemy to abandon the launching of a nuclear offensive or other warlike action, and thus achieve a nation's political, security, and military objectives. Therefore, some people believe that a 'nuclear weapons umbrella' in a sense serves to protect security in the nuclear age.

The concept of an 'information umbrella' is an extension of the concept of a nuclear weapons umbrella. This concept asserts that in the information age, information superiority has a similar deterrent role.[12]

The article proceeds to state that some scholars see an information umbrella as capable of replacing the nuclear umbrella and as superior to the latter insofar as information superiority, unlike nuclear superiority, may actually be exercised in peacetime. Among the key characteristics of the information umbrella, the author explains, is the fact that it can facilitate observing the enemy while denying the enemy the ability to monitor one's own forces. 'Any form of military attack can under certain circumstances become a form of deterrence,' the article argues, and this includes information warfare. The author singles out the possibility of using information superiority to 'gain the initiative,' an end connected to the ability to 'make a huge strike on the opponent at an extremely small price,'[13] and thus win the war.

The article proceeds to explore how a variety of violent and nonviolent means can be used to exploit vulnerabilities in military computer networks. According to the author, the principal forms of combat operations in future information warfare will be viruses and hackers. Viruses will be used to target command and control systems, radars, and sensors, as well as other computer operated platforms such as the navigation and fire systems on aircraft, ships, tanks, and missiles. The Central Intelligence Agency (CIA) and National Security Agency (NSA) of the United States are cited as being known to have exhibited interest in the development and use of viruses for such purposes. The US Defense Advanced Research Projects Agency (DARPA) is also singled out for its interest in 'injecting computer viruses from very long ranges into the tactical systems of aircraft, ships, etc., so as to paralyze the computers in various kinds of weapons systems at critical moments . . .'.[14] In sum, the author argues, the dependence of modern militaries on information networks means that information security will be increasingly critical.

Several exotic terms confront American readers of this piece by Zhou, Wang's article, and other work by Chinese strategists – despite the authors' use of the United States as a model or benchmark. Phrases such as 'potential energy' (what China will store up as it develops high-tech capabilities), 'warfare engineering' (the use of simulations and other peacetime activities to determine conflict outcomes), and 'paralysis combat' (the use of threats to or attacks on information infrastructure to paralyze the enemy) cited above, as

well as others like 'assassin's mace' (a secret weapon that can enable the inferior to defeat the superior) and 'invisible forces' (communications and other high-tech capabilities that are not as easy to count up as guns and tanks), highlight Chinese attention to matters that have been, at best, at the periphery of American military thinking in an era of nation-building, counter-terror, and counterinsurgency campaigns.[15] Specifically, it seems that the Chinese have conceptualized the RMA as a set of technological advances that create new opportunities to target an enemy's resolve through the threat or infliction of focused, limited, but highly damaging strikes. In a world in which nuclear weapons raise the specter of total destruction and are thus almost unusable, cyber attacks and precision strikes may be employed to generate acute pain or losses.

In this vein it is noteworthy that when Chinese military researchers invited a small group of American analysts to Beijing in March 1998 for one of the first post-Tiananmen US-China defense gatherings, albeit at the sub-official level, it was the RMA that was on the agenda.[16] During the meeting, the Chinese speakers focused on the impact of the high-tech aspects of the RMA on command and control, specifically asking the Americans about the use of simulations, 'the organization of US divisions and the flexibility of the division commander to locate himself at different command posts, and how easily he could communicate with subordinate units and headquarters staff officers', as well as the US Defense Department's 'use of IT [information technology] to protect its resources and the use of networks to segregate information traffic'.[17] This suggests a clear focus on the ways in which combat simulations are conducted and influence US decision making; the strengths and weaknesses associated with US command and control arrangements in a networked environment; and the protection or vulnerability of data in Pentagon computers. By 2004, according to the Defense White Paper issued by the State Council Information Office that year, the PLA had embraced an official doctrine of an 'RMA with Chinese Characteristics' that was described as having 'informationalization at the core'.[18]

As hinted above, we may be deceived if we rely only on what is written, particularly in English-language publications that the Chinese can expect foreigners to read. Even if the extant Chinese writings are not designed to mislead, one must account for the possibility that not all RMA exponents within the PRC will be equipped to determine or to foresee its evolution in China. Research by Michael Pillsbury, for instance, indicates the existence of an RMA constituency within the PLA advocating certain technologies and directions for force transformation in opposition to advocates of older, more traditional 'People's War' and 'Local War' doctrines, preparing China to absorb and then gradually fight off an invading force or to defeat another power in a limited, local conflict, respectively.[19] Stepping back from what has been written, we can try to gauge the RMA's impact by considering how it corresponds to or interacts with deeper traditions in China's approach to matters of war and peace.

Chinese strategic culture

From the close monitoring of foreign perspectives to the emphasis on information warfare, many aspects of the Chinese writings on the *xin junshi geming* come into focus when considered in light of the strategic tradition inherited by the PRC. Further, this

tradition illuminates some observable contemporary Chinese strategic behavior that may be associated with the RMA even though it is not discussed in the writings – including the acquisition and selective revelation of new Chinese capabilities. What is the connection between the current regime in Beijing's approach to the RMA and China's strategic tradition? The answer lies in the endurance of certain fundamental philosophical and political views that are reflected in the tradition and continue to shape the regime's behavior around war and peace. It is no accident that Deng Xiaoping encouraged senior PLA strategists to study the ancient Chinese military classics as he launched them on the course of modernization or that he compared the contemporary security environment to the world of the Warring States period, when the classics were written.[20]

The Warring States period (c. 450–221 BC), from which emerged China's most famous book on strategy, Sun Zi's (Tzu's) *Art of War*, was a founding moment for the Chinese autocratic regime. By the end of the period, the Qin dynasty had finally managed to centralize control over all the lands that then made up the Chinese ecumene, prevailing by outmaneuvering and defeating the six other states with which it had been vying for ascendancy for more than a century. Sun Zi's masterpiece offers stratagems and counsel developed for that struggle.

A key feature of the Warring States context was the performance-based nature of political legitimacy. Rulers were judged on their ability to provide at least a subsistence level of goods and to preside over a stable realm, and verdicts were always rendered retrospectively: a dynast was considered to have lost the right to rule if and when he had failed to survive a challenge.[21] The ruling house of a warring state endured so long as the state's peasants and landowners had confidence in its stewardship, confidence derived from the enjoyment of material comfort rather than any organic allegiance. But in the wake of a natural disaster or when confronted with a dynasty that had succumbed to corruption and was no longer capable of rallying forces to its defense, invaders, rebels, or both were likely to encroach. Underlying the performance-based criteria for legitimacy, the various schools of traditional Chinese philosophy converged in empha-sizing the pursuit of harmony with one's environment. Harmony could be achieved through proper social relations and the observance of rites (Confucianism) but also through aligning oneself with nature (Taoism). Both Confucianism and Taoism demand situational awareness, then, as both schools see external signals as the guide for behavior. From this perspective, it is not surprising that signs of tumult in the realm were especially troubling, evidence of political malpractice.

This made for internally preoccupied regimes, with strong Warring States rulers deploying informant networks to report on potentially seditious activities. And it encour-aged volatility: After gathering intelligence, in the face of a challenge rulers were known to strike out or crack down dramatically, lest the appearance of weakness generate its own momentum and encourage other threats. It is against this backdrop that we must understand Sun Zi's insistence on the need both for attention to trends and, where necessary, bold action, to ensure success at a moment of maximum danger.

It is also critical to recognize certain structural factors about the Warring States period that were conducive to using peacetime to prepare for war, including the shallowness of alliance relationships and the relative porosity or interpenetration of the various rival

states. On the first point, security pacts among regimes with domestic stability concerns proved fragile, as outlying landholders could sometimes be bought off by an invading power, or as a ruling house was convinced that its chances of survival would be enhanced by a change in diplomatic alignment. On the second point, the various warring states existed in close proximity and were mutually intelligible culturally and linguistically. Borders were open, with emissaries often traveling from one capital to another. The states were thus eminently knowable to one another. A ruler who was already dispatching spies within his realm could have confidence in his ability to gather information from his agents abroad. At the same time, he had to worry about foreign spies, double agents, and false defectors in his midst, as Sun Zi exhorts. In a world of fluid allegiances, with enemies plotting both within and outside the realm, rulers could not count on a sharp line separating war from peace but rather had to remain vigilant about potential collaboration between foreign and domestic foes.

The remedy prescribed by Sun Zi and the other Chinese classics is to work to construct a secure environment by eliminating enemies and potential rivals starting in the immediate vicinity and building out from there. All conceivable means are included in the arsenal for accomplishing this – from ruses and sabotage to direct attacks – and the fact that enemy rulers and military leaders could be known personally opens up possibilities for exploitation of their particular weaknesses, physical or psychological. By offering inducements, using blackmail, and at times applying deadly force, the texts counsel, a network of friendly or dependent powers can be created as hostile coalitions are divided and weakened. The Qin state that eventually prevailed in the Warring States period was originally a peripheral one, benefiting from the infighting that occurred among the central powers as it built up its capabilities. In embarking on its conquest, the Qin employed a mix of behind-the-scenes diplomatic maneuvers, covert actions, and well-timed brutal direct attacks.

In sum, the Chinese strategic tradition may be said to present a dynamic, intelligence-based approach to competitions with other powers. Adversaries can be expected not only to mount open challenges but also to plot and encourage subversive activities in one's homeland, so they must be continuously watched and assessed. Further, because a failed military enterprise would endanger the regime's domestic legitimacy, moments for action must be carefully calculated. Force should be deployed decisively, when the grounds have been prepared so that success is virtually guaranteed.

When Deng uttered ancient aphorisms, it was easy for Westerners to ignore the unfamiliar references, but consideration of the classical Chinese strategic corpus that he embraced raises questions that compel our attention, especially in light of his role as the sponsor of the PLA's transition from a People's War force to a modernized, RMA-savvy military. For instance, how much of the traditional Chinese approach to politics and legitimacy has endured beneath the Marxist trappings of the PRC? To what degree did Deng perceive the waning of the Soviet Union as ushering in an era of flux and jockeying for power that resembled China's classical founding period? Was he taken with a comparison between the interpenetrated warring states and the porosity of modern states in an era of low mobility costs, peace, and high levels of global commerce? How much should we then read into his famous invocation of the classical Chinese line about 'biding time and hiding capabilities' in 1991?[22] A review of Deng's multi-volume

Selected Works reveals only one other occasion when he spoke similarly, in a report delivered at a meeting of senior cadres of the Taihang sub-bureau of the Communist Party Central Committee in 1943:

> The task of the underground Party organizations in enemy-occupied areas is to gather strength secretly by every means available and to bide their time. They should try to organize well-selected cadres to work underground as extensively as possible. Party members should try to infiltrate all enemy and puppet organizations, as well as local feudal organizations, to carry out their own activities . . .[23]

Putting these references from 1943 and 1991 together, one could form an impression of the classical line as a response to difficult circumstances for the Chinese Communist Party. In shepherding China through the period of the fall of the Soviet Union, Deng's approach, as it had been in the early 1940s when the Party faced Japanese invaders and Kuomintang (Nationalist) rivals, was to advocate the maintenance of a low profile in the face of danger, concomitant with the pursuit of the 'strength' necessary to overcome it.

Analysis of China's Warring States strategic tradition, then, suggests that the PRC's approach to the RMA has been guided by a worldview designed to counter an adversary who poses an external military challenge while also threatening internal stability. Given the advanced capabilities with which this foe is endowed in Chinese writings and military exercises,[24] the adversary in question can only be the United States. According to the tradition, the prescription would be to conceal or create uncertainty about China's posture while gathering intelligence and executing military and diplomatic measures to build up forces – preparing the battlefield. The goal, it follows, would be to acquire the capacity to present the United States with a disposition of forces, or, if necessary, a show of force, so menacing as to virtually guarantee the disappearance of a challenge. With this framework in mind, having surveyed the Chinese writings on the RMA, it makes sense to turn to the record of Chinese activities in the RMA era.

The early Chinese response

China's approach to the RMA can be divided into two periods, with a detection and investigation phase (from the late 1980s to the mid- to late-1990s) paving the way for the current implementation phase. Early in the detection phase, consistent with the classic strategic emphasis on intelligence and monitoring trends, the Chinese sought to draw lessons from the end of the Cold War. The conclusion of PLA thinkers like Major General Xu Hezhen was that the USSR owed its defeat to the Strategic Defense Initiative (SDI) and American IW, with the former draining the economy and the latter sapping the Soviet will.[25] Both the cost-imposing SDI and the 'virus' of democracy are linked to the RMA, as the Chinese understand it to comprehend the acquisition of particular high-tech capabilities like missile defense systems and the use of communications infrastructure to spread ideas damaging to an enemy regime. Xu and other senior PLA officers have written of US efforts to use IW against China.[26]

In terms of practical military effects, the Chinese observed the RMA in action in the First Gulf War (1990–91) and then in Kosovo (1999), where the United States accidentally

bombed China's Belgrade embassy, and their descriptions of these campaigns as examples of 'non-contact' and 'informationalized war' should give pause to those inclined to interpret such terms as non-kinetic. Consider, for instance, this passage in an article called 'Military Theoretical Innovation Needed for Preparing for Information War, High-Tech War', co-authored by a professor in the campaign department at China's National Defense University:

> If we say war in the industrial age is 'iron and steel' confrontation complete with imposing arrays of troops, then war in the information age will emphasize the asymmetrical contest of information that is silent and invisible. This trend is hastening the birth of a brand-new form of war. One new form of war is non-contact warfare, which had its debut in the Gulf War and distinguished itself in the Kosovo war. Today it continues to make big strides in the direction of precision, invisibility, and knowledge. To deal with 'non-contact' war, the most important thing is to develop innovative military theories, disengage ourselves from the traditional contact war model, and break new ground in joint operations, in integrated air and outer space warfare, and in information network warfare.[27]

The connection between 'non-contact' and joint, integrated military operations emerges clearly.

Other PLA analyses of the Gulf War and Kosovo similarly expose the links between abstract concepts and the concrete military capabilities that their authors believe China should acquire. Note the interpretation of Kosovo as an informatized war, for instance, in this paraphrased passage from Major General Dai Qingmen, head of an unspecified (suspected IW) department in the headquarters of the PLA General Staff:

> In terms of the concept of the success or failure of informatized war, the goal is to control the enemy and preserve oneself. The objective of controlling the enemy and preserving oneself was exemplified during the war in Kosovo. Here, in 1999, the US military conducted large-scale air raids on Yugoslavia and forced them to surrender under duress without penetrating deep into Yugoslav territory. The success or failure of informatized war is not determined by the ratio of casualties on either side or whether one side has captured the other side's territory, but rather in forcing the enemy to submit to one's will.[28]

In addition to this concept of 'controlling' the enemy, Dai demystifies 'information war' and 'assassin's mace' or 'trump card' (*shashoujian*) weapons with reference to US conduct in the First Gulf War and Kosovo in a 2000 article called 'Innovating and Developing Views on Information Operations':

> *Synthesization of arms and equipment for fighting an information war in single-dimensional space is a natural demand of seizing information superiority.* In a future war, a belligerent with information superiority is bound to give scope to its own superiority and try to gain the initiative in operations by making full use of various information fighting platforms in three-dimensional space, including a ground-based platform, a sea-based platform,

an air-based platform, and a space-based platform, and by developing a C4 ISR [Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance] system, which integrates human functions with mechanical functions and covers all-dimensional space so that every single-dimensional space, such as ground, sea, air, space, and electronics, will become a battlefield where information will be fiercely contended for; every information struggle in single-dimensional space will bear on eventual control of information; and contention for information control in every single-dimensional space will affect a war in terms of process and outcome.

The author then states that this creates a requirement to attack an adversary's C4 ISR system with either simultaneous or sequential strikes. The key for inferior powers in conflict with superior forces, the article argues, is to achieve 'local information superiority.' The analysis proceeds to address the need for 'serialization' of trump cards. Serial strikes and redundancy are necessary in case a superior enemy has a network capable of resisting solitary information attacks. 'Only by simultaneously developing and serializing high and new technological arms and equipment for information operations, as well as conventional arms and equipment for information operations, will it be possible to create favorable conditions for gaining more initiative in a war,' the article explains. The implication for the PLA is that resources should be invested not only in the development of trump cards but also in the improvement of existing conventional information warfare tools, with an eye toward employing both in serialized operations.

Finally, not all of the analysis of the United States was so positive. Note the language about an 'inferior belligerent' and 'an army with less advanced arms and equipment' above, and then consider this assessment of the changes in warfare wrought by the RMA, published in the quarterly journal of the PLA Academy of Military Science and the China Military Science Association:

> Since ancient times, there have never been combat operations in which stratagems were not employed. Warfare in different eras has different characteristics, and the role which stratagems have played in wars throughout history has not been the same either. In informationized war, the high degree of complexity in the confrontation in information space provides a broader stage on which to employ stratagems. It could be said that in comparison with other combat actions, actions aimed at seizing information supremacy lay more stress on the use of stratagems.[29]

The author goes on to emphasize that the PLA should marshal its strengths in information warfare and 'employ stratagems creatively' to defeat a superior enemy. This will necessarily entail trying to disrupt the enemy's operations in real time, as well as setting the stage in advance in a way that results in the enemy relying on insufficient or misleading intelligence.[30]

The Chinese were thus also tracking signs of US weakness in the 1990s. Embedded in theoretical treatises on the future of warfare under informationalized conditions, PLA officers are arguing that the RMA affords China the chance to 'defeat the powerful enemy', as the article later refers to the United States and the United Kingdom.

Further reading of Chinese reactions to the RMA in practice in the 1990s confirms that these interpretations are representative. Published PLA analysis covering the information-gathering phase highlights how the United States was able to achieve victories through well-timed – that is, surprise – and well-coordinated or 'informatized' strikes. Enemies were not able to strike back at the United States, so the American military mastered 'non-contact' warfare; however, vulnerabilities in the US military and strategic posture were diagnosed. Accordingly, China was said to need to develop both high-tech and conventional capabilities to participate in the RMA. In some of the articles excerpted above, improving the 'quality' – education level and technological sophistication – of PLA personnel as a prerequisite for embracing the RMA is discussed, and the Chinese were eager to learn more about US training practices as soon as the post-Tiananmen restrictions on military contacts were eased. It would be a mistake to conclude from a review of the open-source material that this was all that China extracted from its monitoring of trends in the 1990s, however. Given the acknowledged asymmetry between the US and Chinese militaries in this period and the PLA's desire to use technology transfers to leapfrog, we should not expect to find blueprints for actions to redress the imbalance, at least not labeled as such.

Still, some PLA behavior following from the diagnosis of the situation in the 1990s could not be disguised. 'It wasn't the equal of ours, but it was impressive by any standard, and they did it in one year', was the response in 1999 of an American visitor to a Chinese training center modeled on one that PLA visitors to the United States had toured in the late 1990s.[31] Other evidence of direct Chinese responses to the RMA includes steps taken to reduce the size of the force while increasing the degree requirements, especially in certain branches. As a result of these measures, Chinese military writers can now boast that almost 80 per cent of cadres in the Second Artillery have bachelor's degrees or higher, for instance.[32]

What we observe in this initial period, then, is an effort to gather information about the RMA and to prepare to respond. As a primary matter, preparing to respond required changes in PLA recruitment, training, and procurement. The emphasis on 'information', 'noncontact' and various other potentially benign-sounding kinds of warfare does not seem to indicate a bloodless interpretation of the RMA. Rather, PLA strategists believe that the US achieved remarkable kinetic effects at range in the Gulf War and Kosovo through the manipulation of information available to the opposition and the ability to strike military targets from long distances. Finally, the PRC's approach to the *junshi geming* in this period seems to have involved continuing to reassure the United States about China's inferiority while concealing a nascent effort to confront the United States with an unfavorable balance.

Contemporary Chinese applications

In the current decade, as China has implemented its RMA strategy, we appear to be witnessing a shift from a posture of reassurance toward greater willingness to demonstrate capabilities. During the 1990s, as China gathered data about the RMA and analyzed its effect on the balance of power, the PLA continued to pursue comprehensive modernization – from road-mobile missiles, upgraded nuclear forces, higher quality

fighter aircraft and surface ships, and more stealthy submarines to expanded and improved air defenses, mines, torpedoes, and the like – mostly through foreign purchases.[33] At the same time, consistent with Deng's injunction to 'bide time and hide capabilities', and the broader classical Chinese tradition of denying adversaries intelligence, these advances were made relatively quietly. China did not demonstrate its new weapons systems through tests aimed at other powers, with the important exception of the 1995–96 Taiwan Straits crisis, and many of the new platforms were installed at remote, interior bases, with limited exercises that would have exposed them to public view.

But in the last few years, beginning arguably with the 2007 antisatellite test (ASAT), the world has seen more of China's modernized force structure. What is the logic behind the PLA's show of might through the ASAT test, increasingly prominent military activities in cyberspace, and China's rumored new anti-ship ballistic missile (ASBM)? Why are we increasingly reading about PLA exercises conducted in a complex electromagnetic environment?[34]

Again, in keeping with a strategic tradition that emphasizes secrecy, American readers do not have access to documents outlining the rationale for these gambits. But it is clear that from the perspective of the PLA strategists cited above, the capabilities that have been displayed or are rumored to have been acquired have tremendous disruptive potential. They are non-contact in that they would allow the PLA, at least in an initial strike, to inflict damage at range. Together with ground-based laser painting of objects in orbit and other incidents, the direct ascent kinetic-kill vehicle that China successfully shot into an aging weather satellite in January 2007 seems designed to send a message to the United States about the vulnerability of its reconnaissance and positioning assets in space. Cyber intrusions for the sake of espionage, denial of service, or sabotage similarly have the quality of giving China a way to signal the ability to disrupt American civilian and military operations. Similarly, China's recent ASBM test seems to be part of a program to develop a potent first-strike option against American aircraft carrier battle groups. This program also includes land, air, and submarine based cruise missiles, as well as torpedoes carried on attack submarines.

Does this mean that China has given up on 'hiding its capabilities and biding its time', confident that it can broadcast once-secret aspects of its defense posture? Considering the opacity that still surrounds the PRC's military budget, doctrine, and view of the dominant engagement in a potential conflict with the United States, the answer is clearly no. What has changed is that the PLA now uses uncertainty as a substitute for concealment, where hiding capabilities is no longer practical or desirable. Uncertainty reigns, not only about the budget but also about the true extent of China's cyber or network combat potential.

Further, in the cyber domain, the PLA may be able to benefit from plausible deniability, complicating attribution for attacks. While there would likely be no mystery if a Chinese missile hit a US satellite or aircraft carrier, the absence of any hints from PLA sources about the conditions under which they envision using such weapons is striking. Is the buildup all about Taiwan? If so, then why do the Chinese seem to have blue-water naval ambitions? The posing of such fundamental questions by foreign observers renders the partial revelations undertaken to date consistent with ancient Chinese counsel about maintaining information superiority.

In 2000, then-Senior Colonel (now Major General) Chen Bojiang spoke vaguely to an American interviewer about the connection between Chinese offensive capabilities and expectations for war:

> No enemy would 'let themselves so easily be involved in a protracted war with China', though China might be defeated, because of the excessive cost of campaigning. Moreover, given overall Chinese strategy, 'It is also unallowable to have a protracted war. Under the conditions of new history, the main task of the country is to carry out the economic construction . . . military actions must be [quickly accomplished in] scope and time.

From this, Chen derives an emphasis on the offensive, according to Hawkins, who quotes him to the effect that 'attack as the main resort has an extraordinary importance on the high-tech battlefield'.[35]

What can be inferred is that the Chinese RMA vision is to acquire the capacity to inflict significant costs on an adversary, even a conventionally superior one, through a variety of means from targeting space assets and electro-magnetic pulse attacks to strikes on aircraft carriers and even civilian computer networks. Though new clues and hints have emerged, the full range of tools at the PLA's disposal remains enshrouded, encouraging the United States to err on the side of caution. Facing a potentially broad spectrum of Chinese destructive capabilities and lacking an understanding of the PLA's concepts of operation for using these weapons, US decisionmakers might rule out challenging the PRC.

Conclusion: impact of the Chinese RMA on the military balance

Two questions remain to be addressed: Is the account of Chinese strategy advanced here the most convincing interpretation? And, are Chinese military strategists correct in their estimate that the RMA alters the balance of power between China and the United States, neutralizing or supplanting US conventional superiority?

The first question raises the issue of alternative hypotheses, including the argument that China is not seeking to challenge the United States or redress the balance but merely to claim its place as a great power. According to this hypothesis, the PLA's modernization is not distinctive but rather consistent with expectations derived from the record of other great powers' conduct. Given the range of Great Power behavior observable in the twentieth century, it is difficult to know whether to be reassured by this line of reasoning. China could have modeled itself on postwar Germany or Japan and avoided the risk of antagonizing the United States. To be sure; that would have lowered the costs for a Taiwanese declaration of independence, but if Taiwan is the reason that the PRC has embarked on a massive buildup, then China's recidivism makes it a certain kind of rising power, and the acquisition of capabilities that indicate ambitions well beyond Taiwan remain to be explained.

A second alternative hypothesis would counter the details about the RMA above with evidence that the PLA is primarily focused on domestic security, with the bulk of forces still

assigned to the Army, attending to border control, disaster relief operations, and other conventional or internal missions. To this there is an easy response. One virtue of China's RMA strategy from Beijing's point of view is that it is consistent with a continuing investment in domestic stability forces. Domestic stability remains the Chinese Communist Party leadership's priority, and to date, the PLA has proven capable of serving it even as it has acquired specialized, high-tech capabilities and undergone organizational transformation in areas related to the fielding of these capabilities. For the PLA and its Party leadership, moreover, external and internal threats are linked, as described above, so that the ability to deter the United States may be seen inseparable from the domestic security mission.

Turning to the question of the military balance, the Chinese strategists could err in thinking that the PLA's adoption of the RMA renders China capable of deterring, or if necessary, overcoming a challenge from the United States. Their fallibility may reveal itself in three ways.

First is the possibility that they will misjudge what display of threat or force is sufficient to break American will and find themselves unprepared for resiliency in the face of what had been envisioned as a fait accompli.

Second, to the extent that they have envisioned the application of a 'warfare engineering' or 'serialized' approach, they may fail to foresee the ways that a conflict could escalate – perhaps because the adversary turns out to possess and deploy hitherto unknown capabilities.

Third, in the course of the PLA's selective revelation of new capabilities, the Chinese may find that they incite a response that they had not expected, either from a regional power or from the United States. This would disrupt whatever phased rollout had been planned and might even embroil the PLA in a conflict prematurely, prior to the full acquisition of assets necessary to defeat the enemy's will. One can imagine that there are debates within the PLA leadership ranks over how and when to test, and there is no guarantee that the right conclusions will always be reached.

Acknowledgements

Notes

1 This evolution was predicted by at least one early American observer of the RMA: 'We live in a period of large scale, rapid technological and, very likely, social change. The pace of technological change is accelerating. We have not fully exploited and adjusted to developments in information and communication technologies; the next wave of change-producing developments is coming out of the biological and human sciences, which are likely to become significant sources of change in military operations and organizations.' Andrew W. Marshall, 'Forward', *The Military-Technological Revolution: A Preliminary Assessment, 1991* (Washington DC: Center for Strategic and Budgetary Assessments 2002).

2 Marshall, 'Forward', and Andrew F. Krepinevich, *The Military-Technological Revolution: A Preliminary Assessment, 1991* (Washington DC: Center for Strategic and Budgetary Assessments 2002).

3   Thomas Keaney and Eliot A. Cohen, *Gulf War Air Power Survey Summary Report* (Washington DC: US Government Printing Office 1993), 235–51; Stephen Biddle, *Military Power: Explaining Victory and Defeat in Modern Battle* (Princeton UP 2005).

4   Dima P. Adamsky, 'Through the Looking Glass: The Soviet Military-Technical Revolution and the American Revolution in Military Affairs', *Journal of Strategic Studies* 31/2 (April 2008), 257–94; Adamsky, *The Culture of Military Innovation: Comparing the RMA in Russia, the United States, and Israel* (Stanford UP 2010).

5   Xia Liping, 'China, US, Japan Strategic Relations: Striving for Win-win and Avoiding Security Dilemmas', CPP20071109587001 Beijing *Shijie Jingji Yu Zhengzhi* in Chinese, 1 Sept. 2007.

6   Michael Pillsbury, *China Debates the Future Security Environment* (Washington DC: National Defense UP 2000).

7   Wang Baocun, 'Military Reform in a Transformation Era', FTS19980506000321 Beijing *Jiefangjun Bao* in Chinese, 21 April 1998, 6.

8   Ibid.

9   Eliot A. Cohen, 'A Revolution in Warfare', *Foreign Affairs* 75/2 (March/April 1996), 37–54.

10 Wang, 'Military Reform'.

11 Liu Kun, 'China: Torpedo Stealth', FTS19960809000630 Beijing *Jianchuan Zhishi* [Naval and Merchant Ships] in Chinese, 9 Aug. 1996, 27.

12 Zhou Fangyin, 'The Effect of the Information Revolution on Military Affairs and Security', CPP20010817000186 Beijing *Xiandai Guoji Guanxi* in Chinese, 1 Aug. 2001, 28–32.

13 Ibid.

14 Ibid.

15 Wang, 'Military Reform'; Zhou, 'The Effect'; 'Watch Closely the Revolution of Military Technology in the New Era', interview with Zhu Guangya, FTS19951023000001 *Beijing Jiefangjun Bao* in Chinese, 23 Oct. 1995, 7; Peng Guangqian and Yao Youzhi (eds.), *The Science of Military Strategy*, English language edition (Beijing: Military Science Publishing House 2005), 431–3.

16 Robert Butler, Charles Hawkins, and Timothy Thomas, 'West Meets East: Chinese and Western Researchers Exchange Views on the Revolution in Military Affairs', Historical Evaluation and Research Organization (HERO) Library, accessible at <www.herolibrary.org/p117.htm> (accessed June 2009).

17 Butler, Hawkins, and Thomas, 'West Meets East'.

18 PRC State Council, *China's National Defense in 2004* (Beijing: State Council Information Office 2004).

19 Pillsbury, *China Debates*.

20 Jacqueline A. Newmyer Deal, 'Oil, Arms, and Influence: The Indirect Strategy Behind Chinese Military Modernization', *Orbis* (Spring 2009), 205–19; Pillsbury, *China Debates*.

21 Note the contrast between this kind of materialist, arbitrary, and contingent political culture on the one hand and the modern Western liberal notion of rule by law, according to the consent of the governed, who are endowed with basic rights, including that of regular political participation on the other.

22 Sheryl WuDunn, 'China Says Soviets Erred Earlier in Picking Leader', *New York Times*, 8 Sept. 1991, section 1, p.13.

23 *Selected Works of Deng Xiaoping*, Vol. 1 (1938–1965), (Beijing: Foreign Languages Press 2006).

24 Ding Haiming and Sun Zhaoqiu, 'First Appearance of "Informatized Blue Army" in the Training Field', CPP20050711000095 Beijing *Jiefangjun Bao* (Internet Version-WWW) in Chinese, 11 July 2005, 2.

25 Shen Weiguang, 'Trends in the Development of World Warfare – Reducing Destructive Force', in idem (ed.), *On the Chinese Revolution in Military Affairs* (Beijing: New China Press 2004), 131–46, cited in Timothy L. Thomas, *Decoding the Virtual Dragon: Critical Evolutions in the Science and Philosophy of China's Information Operations and Military Strategy – The Art of War and IW* (Ft Leavenworth, KS: Foreign Military Studies Office 2007); Xu Hezhen, 'Focus on Psychological War Under the Background of Larger Military Strategy', CPP20001211000122 Beijing *Zhongguo Junshi Kexue* in Chinese, 20 Oct. 2000, 67–76; see also Xu Hezhen, CPP20011121000214 *Beijing Zhongguo Junshi Kexue* in Chinese, 30 Sept. 2001, 94–100.

26 Ibid.

27 Fan Zhenjiang, Zhao Tianliang and *Jiefangjun Bao* reporter Zhang Guoyu, 'Military Theoretical Innovation Needed for Preparing for Information War, High-Tech War', CPP20030121000089 Beijing *Jiefangjun Bao* (Internet Version-WWW) in Chinese, 21 Jan. 2003, 6.

28 Dai Qingmen, 'Discourse on Armed Forces Informationization Building and Information Warfare Building', in Shen Weiguang (ed.), *On the Chinese Revolution in Military Affairs* (Beijing: New China Press 2004), 39–47, cited in Thomas, *Decoding the Virtual Dragon*.

29 Dai Qingmin, 'On Seizing Information Supremacy', CPP20030728000209 Beijing *Zhongguo Junshi Kexue* in Chinese, 20 April 2003, 9–17.

30 Ibid.

31 Charles F. Hawkins, 'The People's Liberation Army Looks to the Future', *Joint Forces Quarterly*, No. 25 (Summer 2000).

32 Andrew S. Erickson and David D. Yang, 'On the Verge of a Game-Changer', US *Naval Institute Proceedings* 135/5 (May 2009).

33 Richard Fisher, *China's Military Modernization: Building for Regional and Global Reach* (Westport, CT: Praeger Security International 2008).

34 PRC State Council, *China's National Defense in 2006* (Beijing: State Council Information Office 2006); Cao Qisheng and Huang Chao, 'Jinan Theatre Carries Out Special-Topic Study on Frequency Use', *PLA Daily* in English, 12 June 2009.

35 Hawkins, 'People's Liberation Army'.

Bibliography

Adamsky, Dima P., 'Through the Looking Glass: The Soviet Military-Technical Revolution and the American Revolution in Military Affairs', *Journal of Strategic Studies* 31/2 (April 2008), 257–94.

Adamsky, Dima P., *The Culture of Military Innovation: Comparing the RMA in Russia, the United States, and Israel* (Stanford UP 2010).

Biddle, Stephen, *Military Power: Explaining Victory and Defeat in Modern Battle* (Princeton UP 2005).

Butler, Robert, Charles Hawkins, and Timothy Thomas, 'West Meets East: Chinese and Western Researchers Exchange Views on the Revolution in Military Affairs', Historical Evaluation and Research Organization (HERO) Library, <www.herolibrary.org/p117.htm>.

Cao Qisheng and Huang Chao, 'Jinan Theatre Carries Out Special-Topic Study on Frequency Use', *PLA Daily in English*, 12 June 2009.

Cohen, Eliot A., 'A Revolution in Warfare', *Foreign Affairs* 75/ 2 (March/April 1996), 37–54.

Dai Qingmin, 'On Seizing Information Supremacy', CPP20030728000209 Beijing *Zhongguo Junshi Kexue*, in Chinese 20 April 2003.

Dai Qingmen, 'Discourse on Armed Forces Informationization Building and Information Warfare Building', in Shen Weiguang (ed.), *On the Chinese Revolution in Military Affairs* (Beijing: New China Press 2004).

Deal, Jacqueline A. Newmyer, 'Oil, Arms, and Influence: The Indirect Strategy Behind Chinese Military Modernization', *Orbis* (Spring 2009), 205–19.

Deng Xiaoping, *Selected Works of Deng Xiaoping*, Vol. 1 (1938–1965) (Beijing: Foreign Languages Press 2006).

Ding Haiming and Sun Zhaoqiu, 'First Appearance of "Informatized Blue Army" in the Training Field', CPP20050711000095 Beijing *Jiefangjun Bao* (Internet Version-WWW) in Chinese, 11 July 2005.

Erickson, Andrew S. and David D. Yang, 'On the Verge of a Game-Changer', *US Naval Institute Proceedings* 135/5 (May 2009).

Fan Zhenjiang, Zhao Tianliang and *Jiefangjun Bao* reporter Zhang Guoyu, 'Military Theoretical Innovation Needed for Preparing for Information War, High-Tech War', CPP20030121000089 Beijing *Jiefangjun Bao* (Internet Version-WWW) in Chinese, 21 Jan 2003.

Fisher, Richard, *China's Military Modernization: Building for Regional and Global Reach* (Westport, CT: Praeger Security International 2008).

Hawkins, Charles F., 'The People's Liberation Army Looks to the Future', *Joint Forces Quarterly*, No. 25 (Summer 2000).

Keaney, Thomas and Eliot A. Cohen, *Gulf War Air Power Survey Summary Report* (Washington DC: US Government Printing Office 1993).

Krepinevich, Andrew F., *The Military-Technological Revolution: A Preliminary Assessment, 1991* (Washington DC: Center for Strategic and Budgetary Assessments 2002).

Liu Kun, 'China: Torpedo Stealth', FTS19960809000630 Beijing *Jianchuan Zhishi* [Naval and Merchant Ships] in Chinese, 9 Aug. 1996.

Marshall, Andrew W., 'Forward', *The Military-Technological Revolution: A Preliminary Assessment, 1991* (Center for Strategic and Budgetary Assessments 2002).

Peng Guangqian and Yao Youzhi (eds.), *The Science of Military Strategy*, English language edition (Beijing: Military Science Publishing House 2005).

Pillsbury, Michael, *China Debates the Future Security Environment* (Washington DC: National Defense UP 2000).

PRC State Council, *China's National Defense in 2004* (Beijing: State Council Information Office 2004).

PRC State Council, *China's National Defense in 2006* (Beijing: State Council Information Office 2006).

Shen Weiguang, 'Trends in the Development of World Warfare – Reducing Destructive Force', in Shen Weiguang (ed.), *On the Chinese Revolution in Military Affairs* (Beijing: New China Press 2004).

Thomas, Timothy L., *Decoding the Virtual Dragon: Critical Evolutions in the Science and Philosophy of China's Information Operations and Military Strategy – The Art of War and IW* (Ft Leavenworth, KS: Foreign Military Studies Office 2007);

Wang Baocun, 'Military Reform in a Transformation Era', FTS19980506000321 Beijing *Jiefangjun Bao* in Chinese, 21 April 1998.

'Watch Closely the Revolution of Military Technology in the New Era', interview with Zhu Guangya, FTS19951023000001 Beijing *Jiefangjun Bao* in Chinese, 23 Oct. 1995.

WuDunn, Sheryl, 'China Says Soviets Erred Earlier in Picking Leader', *New York Times*, 8 Sept. 1991.

Xia Liping, 'China, US, Japan Strategic Relations: Striving for Win-win and Avoiding Security Dilemmas', CPP20071109587001 *Beijing Shijie Jingji Yu Zhengzhi* in Chinese, 1 Sept. 2007.

Xu Hezhen, 'Focus on Psychological War under the Background of Larger Military Strategy', CPP20001211000122 Beijing *Zhongguo Junshi Kexue* in Chinese, 20 Oct. 2000, 67–76.

Xu Hezhen, CPP20011121000214 Beijing *Zhongguo Junshi Kexue* in Chinese, 30 Sept. 2001, 94–100.

Zhou Fangyin, 'The Effect of the Information Revolution on Military Affairs and Security', CPP20010817000186 Beijing *Xiandai Guoji Guanxi* in Chinese, 1 Aug. 2001.

21 Iron cannot fight[1] – The role of technology in current Russian military theory

Tor Bukkvoll

This article discusses how the dominating schools in current Russian military theory view the role of technology in future war – a question debated among many modern militaries.[2] Resources are not unlimited, and with new military platforms and systems getting more sophisticated and expensive, many countries now more than ever face the dilemma of how much resources should be spent on manpower as against on new technology. With its decision to maintain one million men under arms, Russia remains the fifth largest military power in the world in terms of the number of troops. At the same time, the country retains one of the largest military-industrial complexes of the world. Thus, the manpower versus technology dilemma is especially acute in the case of Russia. The aim of the article is to enrich the Western discussion of this dilemma by exploring the perspectives of the Russian debate, and also briefly to evaluate the impact of these schools of thought on current Russian military policy.

Simply put, current Russian military theory can be divided into three main schools: the *traditionalists*, the *modernists* and the *revolutionaries*.[3] The traditionalists claim, in the same way that a growing number of Western military theoreticians do, that developments within information technologies and precision weapons do not fundamentally change the character of war.[4] They see little reason why the purchase of new technology should come at the expense of manpower.

The modernists agree with the traditionalists that war has not changed essentially because of new technologies, but they still believe the changes warrant a significant reallocation of resources from manpower to technology. Fundamentally, the modernists want Russia to undergo many of the structural changes that Western militaries have gone through since the end of the Cold War.

The revolutionaries on the contrary, claim that the changes brought about by new technologies are ground-breaking, because, as will be explained later, they fundamentally change the character of war among modern militaries. In this sense, the revolutionaries are the true successors to the Soviet theorists of a Revolution in Military Affairs (RMA) of the 1980s. In the contemporary Russian debate, the revolutionary message is associated first of all with the late General Vladimir Slipchenko (1935–2005). Joining the Western trend of identifying generations of warfare, Slipchenko defines six of these, and claims that future war between modern states will be 'sixth generation warfare'.[5] The historical breaking point for Slipchenko and the other revolutionaries was NATO's 1999 air campaign against Yugoslavia.

Before we proceed with the discussion of the three schools of theory, however, a few caveats needs to be addressed. The division of current Russian military theory into three schools is a construct made for analytical purposes by the article's author. As such, many of the theorists mentioned would not necessarily themselves have agreed with their own classification if they had read the text. Furthermore, the schools of theory are to be understood as strong trends rather than as mutually exclusive camps. Theorists might easily belong to one camp but at the same time hold views belonging to another camp on specific issues. There are also, as we will see, issues such as network centric warfare, where all three schools are in broad agreement.

The article proceeds as follows. First, there is a short presentation of the Russian military-theoretical inheritance and of the current arenas for military-theoretical debate in Russia. Then, the main body of the article consists of a more detailed analysis of the three main schools of thought. Finally, the article ends by taking a look at the extent to which current Russian military policy reflects the thinking of the three schools, and to what extent their recommendations in the future can be realized under different scenarios for defence spending and for the state of the Russian defence industry.

The inheritance of Russian military theory

Military theory was one of the fields of study where the Soviet Union produced original works of international standing. First and foremost that was true for the theories of 'deep battle' in the 1920s and 1930s, and for the Soviet ideas of a Revolution in Military Affairs (RMA) in the 1980s.

The 'deep battle' doctrine, developed by, among others, Mikhail Tukhachevskii, Vladimir Triandafilov and Georgii Isserson, focused on the need to strike deep behind enemy lines in order to destroy the enemy's ability to defend his own front. The doctrine also contained progressive ideas about combined arms, and it introduced an operational level between the tactical and strategic levels.[6] According to Shimon Naveh, the main effect of the writings of Marshal Tukhachevskii and others was to produce 'a transformation from a paradigm based on tactical consciousness to a paradigm based on operational art'. He also claims that the American Armed Forces in their 'conceptual crisis of the late 1970s' explicitly turned to the Soviet writers of the 1920s and 1930s for inspiration.[7]

The Russian theories in the 1980s on an emerging revolution in military affairs (RMA), seems to have been a case of discovering something about the enemy that the enemy was not able to discover about himself. It was especially Western developments in computer technology and precision weaponry that impressed Soviet military thinkers. When the US domestic RMA-debate took hold in the early 1990s, that was with a direct reference to the Soviet debate. Andrew Marshall at the Office of Net Assessment started in 1992 to circulate ideas within the US military that he had borrowed from his own readings of Soviet military journals, first of all *Voiennaia mysl* (Military Thought).[8]

A similar impact on international military theory is difficult to identify from later Soviet and post-Soviet writings, although there are references to Vladimir Slipchenko's idea of sixth generation' warfare in David A. Deptula's work on effect-based operations.[9]

Current arenas of Russian military-theoretical debate

There are three main arenas of military-theoretical debate in Russia today. The first, and probably most important, is the General Staff. The General Staff has since pre-Soviet times had a leading role in Russian military thinking. Inspired initially by the Prussian military tradition, the General Staff was in Russia both before, during and after the Soviet period, seen as 'the brain of the Armed Forces'.[10] According to Dima Adamsky, predicting international military developments has been as important to the General Staff as preparing and leading military operations.[11] Within the General Staff, the Centre for Military-Strategic Studies, established in 1985, has been the key institution in this regard.

There has, nevertheless, been considerable conflict over the role and authorities of the General Staff in post-Soviet times, but these have mostly had to do with the powers of the General Staff in day-to-day work. Few have questioned the responsibility of the General Staff for trying to look into the military crystal bowl. In 2004, there was a reform which transferred many of the powers regarding day-to-day management of the Armed Forces from the General Staff to the Ministry of Defence. The main purpose of this reform was to avoid confusing double leadership, but it was also justified by the fact that the General Staff now would have more time to focus on predicting the future.[12]

The second arena of debate is the Military Academy. This institution was established by President Boris Yeltsin in 1995, with the specific purpose of providing a state financed but still independent voice into the domestic defence debate. The Military Academy has since its inception been led by the leading traditionalist General Makhmud Gareev. Gareev came directly to the Academy from a high position in the General Staff. There he had been one of the founders of the Centre for Military-Strategic Studies. It was therefore already from the beginning reason to question to what extent the Russian military would be able to establish 'an independent voice'.

According to the editorial board of *Nezavisimoe Voennoe Obozrenie* (NVO) – the main independent publication on Russian military affairs – the Military Academy has steadily grown in size and diminished in influence since its foundation.[13] By 2006, the Military Academy had a staff of 584 full-time and 270 part-time employees.[14] There is reason to believe that much of the military top brass now treats the Military Academy as much with indulgence as they do with respect. For example, the requests to the Academy from the Armed Forces for analyses have steadily decreased. According to NVO, the conclusions in studies from the Military Academy have become more and more in line with what the Academy expects that the military top brass wants to hear. This is because the Academy tries in vain to regain its falling status.[15] Despite the declining status of the Academy, however, the same is probably not true for the status of its leader. At the age of 87, General Makhmud Gareev remains one of the most influential and prolific writers within the traditionalist camp. In 2010, he published his most comprehensive work yet, the 900-page-long *Srazhenia Na Voenno-Istoricheskom Fronte* (Battles on the Military-Historical Front), in which he elaborates the traditionalist view on wars in the past, present and future. Gareev was one of the authors of the 2010 Russian military doctrine. It should also be mentioned that the Academy's annual conference is still seen as a major event in the Russian military debate, attended by a significant portion of the top brass.

The General Staff's monthly journal – *Voennaia Mysl* (Military Thought) – is the main outlet for the ideas generated both in the General Staff and the Military Academy. It is often criticized for a strong bias in favor of the traditionalists. The leading revolutionary, Vladimir Slipchenko, claimed that the majority of the articles in *Voennaia Mysl* just 'go on and on about the wars of the past'.[16] A quick search through the archive of the journal since 1999 shows that Gareev had six articles published, whereas Slipchenko had none. There were further a total of 64 references to works by Gareev, and only 11 to works by Slipchenko. Slipchenko, since he was the leading writer among the revolutionaries, was of course a biased commentator in this regard. However, more neutral observers have also questioned the objectivity of the journal. Igor Popov argues that 'with all respect for the publications in *Voennaia Mysl*, they more or less all belong to the conservative [read traditionalist] school. These authors are all absolutely certain about their own conclusions, which are based on the iron concrete logic of the Soviet military-theoretical school.'[17] Still, there are exceptions. In the period from 2003 to 2010, Slipchenko's revolutionary colleague, General V.V. Kruglov, published a total of four long articles in *Voennaia Mysl* where he argued for the revolutionary point of view.

Finally, the third arena of debate is found in other military media and at conferences organized by different more or less independent think-tanks. Russia has a vibrant community of independent defence journalists and experts. These do not only report on or analyze current military affairs, but also present their own views on the future of military conflict. It is difficult to measure to what extent debate in these independent arenas influence the military establishment, but it is fair to assume they are not totally isolated from each other.

It should also be mentioned here that while some Russian military theorists are familiar with, and do refer to current Western or other foreign works, a clear majority do not. This is probably first of all the result of lacking English skills, but it possibly also stems from an idea that the Russian military-theoretical tradition is so rich that it can do without foreign input. Either way, the main point here is that large parts of the Russian debate becomes very in-house, with all the dangers that this represents for 'group think' and reproduction of misperceptions. In particular, that seems to be the case for many of the traditionalists.

The traditionalists

The traditionalists essentially reject the view that new technologies have or will revolutionize warfare. According to Igor Popov, the traditionalists seem themselves as defenders of 'pure Clausewitzanism'.[18] This indicates a strong belief in eternal truths about the character of war.

In line with this historical long term view they also believe that individual countries have historically inherited traditions and traits of warfighting that it would be wrong to ignore when planning for the future. Nothing good would come from trying to break free of the national strategic and military culture. Dima Adamsky identifies some of the most important axioms of Russian military culture as:

- 'moral superiority in battle', based on a belief that Russia has a comparative advantage in the Russian population's exceptional fighting spirit and willingness to sacrifice;

- insistence on technology only as a mass multiplier, not a means to fight better with fewer soldiers;
- the conviction that theory should guide practice, which means that doctrine should dictate demands on technology. Technological progress should not lead to new doctrine.[19]

All three axioms are easily recognized in current traditionalist writings. For example, Gareev discusses the difference between what he calls the American and Russian military schools. He claims that the main distinction is that the Russian school looks to 'great moral power' as a decisive advantage.[20] Gareev and the traditionalists, however, do not think that just any country can decide to develop 'great moral power' as a military capacity. The Russian superiority in this regard is historically determined in the same way that technological preeminence is in the case of the United States. We are dealing with historically developed mindsets that change only very slowly if ever. To support this argument, the traditionalists can to some extent point to sociological data. Surveys show that even today, values such as endurance in the face of hardship are central in the approach to life of most Russians.[21]

The axiom about technology as only a force multiplier is refound in Gareev's insistence that Russian efforts to develop high precision weapons should not come at the expense of the planning and training for traditional military operations. The new capacities must come as an addition, not a substitute.[22]

The axiom about doctrine guiding the development of technology appears to be a military variant of the general Russian preference for top-down management. This preference has roots back to Tsarist times, and can today easily be seen in the Russian leadership's approach to modernization of the economy. The spinal reflex seems to be for commanding modernization from the top rather than providing supportive conditions and then wait for modernization to grow from below. It is rare, also today, for the Russian military industry to pursue new technologies on its own initiative and then propose them to the Armed Forces. Technological development overwhelmingly comes in response to demand specifications from the military.

The traditionalists are mainly interested in state-on-state warfare, although they also recognize, as a secondary concern, the need for an ability to conduct counter-insurgency operations. They see defence against the West, and in the longer run potentially also against China, as the main challenges. Despite the end of the Cold War, Gareev claims that Russia's security predicament has not been as unsecure since 1612 ('the time of troubles', when the Rurik dynasty had fallen, Russia was occupied by the Polish-Lithuanian kingdom, and there was widespread civil unrest).[23]

In many traditionalist writings this fear of the West takes the form of a mix between fear of military attack, and concern about some kind of a non- or less military cultural political takeover of Russia by countries with alien values. For example, the two representatives of the Military Academy, General Boris Cheltsov and Colonel Sergei Volkov, in an article discussing the Western concept of effect-based operations, claim that this is something much more than just a concept for how to execute battles. They claim it is something the West is continually engaged in. According to them, the purpose of effect-based operations is 'to deprive all states, peoples, armies and governments of any kind of

independence, sovereignty and subjectivity, and turn them into totally controllable and programmable mechanisms'.[24] This seems a relatively paranoid example, although if we consider some of the original US justification for introducing network-centric warfare, such as Arthur Cebrowski and Thomas Barnett's idea of the US military as an instrument in the service of globalization by removing recalcitrant regimes, it is possible to understand where some of the paranoia comes from.[25] However, also more moderate Russian military than Cheltsov and Volkov have related ideas. For example, Presidential adviser for military policy and former General Staff officer, General Alexander Burutin, believes that

> the threats from abroad have already today lost some of their purely military character and become more complex. This is taking place because military-technical, military-economic, informational and other factors have much more joint effects than they used to. In general, the border between war and peace becomes more and more blurred.[26]

The traditionalists' emphasis on many men under arms and Russian prerogatives in fighting spirit and morale, should, however, not be interpreted as being 'anti-technology'. The traditionalists embrace most new technologies and are seriously concerned about the dire state of affairs in many parts of the Russian military-industrial complex. But, they just do not think new technologies will fundamentally change the character of war, and they warn strongly against giving priority to technology at the expense of manpower.

Furthermore, most traditionalists – consciously or unconsciously – ignore the economic dimension of the technology versus manpower equation. Western discussions on this topic are to a large extent driven by the obvious realization that under a regime of limited resources you cannot have plenty of both. A similar recognition is hard to come by in the writings of the Russian traditionalists. This is probably a result of a 'historical hang-over'. Most traditionalists had their formative years in the Soviet military – an organization that had top financial priority. Once you have experienced that the money is more or less always there, it is apparently hard to adapt to the contrary.

A final point is that the traditionalists believe Russian conventional military technological development should stop striving for parity and/or similarity with the military technological development of the West – in particular the USA. The idea of developing an asymmetric technological response – popular in many nations with more or less strained relations with the West – has become a truism among the Russian traditionalists. The main reason is the realization that the Western lead is too great to catch up with. In addition, even if the Russian economy successfully modernized, the disappearance of the Soviet Union means that the significantly smaller Russian state cannot alone restore the rough parity that existed between the USA and the Soviet Union. According to the former mentioned presidential adviser for military policy, General Alexander Burutin,

> a crucial element in our plans for the development of new armaments must be an orientation towards an asymmetric response to the development and entering into service of the expensive new systems of the developed foreign countries.[27]

The traditionalists do not seem to have dived very systematically into what an asymmetric strategy actually might look like, but three features seem to stand out from their writings. Asymmetric technologies should: (1) have a disruptive effect on new Western technologies, (2) be developed in areas where the domestic military industry has particular advantages, and (3) be much cheaper to develop and produce than new Western technologies. Boris Cheltsov and Sergei Volkov from the Military Academy, have for example discussed the possibility of developing 'swarms of mini or micro robot based countermeasures' to disrupt Western network capabilities.[28] They do not detail how this could be done technically, but the example illustrates the asymmetric thinking.

Some Russian discussions of asymmetric technologies also indicate an understanding of the concept similar to the concept of 'anti-access' capabilities. Anti-access here means any technology whose primary purpose is to defend against intruders, and which is not at the same time very suitable for offensive purposes. Stationary air defence would be a prime example, but also mines, land based anti-ship cruise missiles and many other systems would serve the anti-access purpose. However, the exact relationship between asymmetric technologies and anti-access capabilities remains for the time being unclear.

There is every reason to believe that the traditionalist view by far has the most adherents within the Russian military today. Their views dominate not only *Voennaia Mysl*, but also most other military periodicals. The dominance can probably be explained both by intellectual inertia, and by the fact that many officers have had a personal interest in maintaining the status quo. In particular, the traditionalist preference for many men under arms can partly be explained by the self-interest of officers who with fewer men to command could become superfluous.

The revolutionaries

The revolutionaries claim that war has changed fundamentally and irrefutably. They also claim that those states not willing to change their Armed Forces accordingly, will in the future be unable to defend their sovereignty. The leading theorist of this school was, until his death in 2005, General Vladimir Slipchenko. He and Gareev are seen as two of the most prominent and influential post-Soviet military theoreticians in Russia. For several years, these two held respectively the positions of Vice-President and President of the Military Academy. Slipchenko, despite the fact that he and Gareev ended up with opposite views of the future of warfare, still referred to Gareev as his teacher.[29] Slipchenko's works are present at the desks of most Russian officers who sympathize with the revolutionary school.[30]

The turning point for the Russian revolutionaries was the NATO air campaign against Yuogoslavia in 1999. According to Slipchenko, this campaign had in reality no other purpose than for the US to be able to test her new precision weapons. Slipchenko sees this war as the first example of a sixth generation war. According to him, war through history has evolved through the following generations (as shown in Table 1).

As seen in the lower right cell of the table, Slipchenko believes that war between modern states in the future will take place with little if any physical contact between the warring parties. He also assumes that the new precision weapons will be directed mostly at civilian targets. The purpose will be to break the enemy's resolve to continue fighting

Table 1 Slipchenko's Generations of Warfare[31]

Generation	The character of war	The purpose of war
First generation: 500 BC to AD 900	Hand-to-hand combat with primitive arms	Destruction of the enemy and take-over of his weapons
Second generation: 900 to 1700	Firearms, battle at some distance, and sea battles in the littoral	Destruction of the enemy and submission of his territory
Third generation: 1700 to 1800	Increased firepower and precision, trench warfare and battles on the world oceans	Destruction of the enemy, his economy and political system
Fourth generation: 1800 to 1945	Automatic weapons, battle tanks and air battles	Destruction of the enemy's military forces, his economy and political system
Fifth generation: 1945 to 1990	Nuclear weapons and the balance of terror	Political goals unachievable by the use of nuclear weapons
Sixth generation: 1990 —	Precision weapons and defence against these, information warfare and electronic warfare	Destruction of the enemy's economy with the help of long distance no-contact warfare

Source: See note 31.

by incurring unacceptable economic and civilian losses. Taking this baseline scenario as his point of departure, Slipchenko reaches the following conclusions about how future wars will differ from the past:

- The importance of nuclear arms will gradually wither. They will still be around for a long time, but conventional long-distance precision weapons will gradually take their place. These new weapons will turn out to have a greater deterrent effect [than nuclear arms] because of their higher credibility of being used.[32]
- Wars will generally be much shorter than they used to be.[33]
- Countries worried about their future will transform the structure of their Armed Forces from the traditional army, navy and air force, to 'strategic attack forces' and 'strategic defence forces'.[34]
- The twenty-first century will be the century of sea power. This is because naval platforms will be preferred as launchers for the new precision weapons.[35]
- The tactical level of warfare will lose much of its significance, and the strategic level will become even more important.[36]
- To the extent that land forces will survive, land and air forces will swap roles, the main task of the land forces will now be to support the air forces.[37]

Based on this image of future war, Slipchenko also has a long range of suggestions for reform of the Russian Armed Forces:

- Maximum priority should be given to air defence, including defence against space based weapons. All air defence capacities should be united into one service (a decision to do this was made by President Medvedev in December 2010). Air

defence should stop being narrowly anti-aircraft, and instead develop capacities against any air- and space-based weapons systems. New air defence systems should be able to destroy targets out to about 3,000 kilometres from Russia's borders. All new air defence systems should also be able to detect targets by other means than radar.[38]

- Tanks, artillery, radar based air defence and many other current military systems and platforms will become redundant.[39] No one will ever again contemplate attacking Russia over land.[40]
- Fighter planes, including fifth generation, will have little use in future wars. On the other hand, tankers and planes that can stay in the air for a very long time, especially close to enemy launch platforms, will increase in importance.[41]
- The Army should be abolished, and the remaining 'land tasks' such as border control and smaller local conflicts should be left to interior and border forces.[42]
- The Navy's main function should be to serve as a platform for precision weapons.[43]
- Sixth generation warfare makes it superfluous to think about who could become your enemy and structure your Armed Forces according to that particular threat. Threats can emanate from anywhere in the world in the new scenario.[44]

With regards to the fundamental question asked here, the priority of technology in relation to manpower, the revolutionaries are obviously on the side of technology. In Slipchenko's mind, the new technologies are a matter of survival. Those who do not give the new technologies absolute priority, can in the future have no hope of defending their sovereignty. This idea has spread beyond the small camp of revolutionary theorists. It is for example reflected in a 2010 statement by the Head of the Centre for Military-Strategic Studies in the General Staff, Colonel Sergei Chekinov, that the 1991 Iraq War changed the character of war fundamentally, by demonstrating that a technologically superior country can nullify a quantitatively superior force.[45] In contrast to the traditionalists, however, the trade-off between technology and manpower is recognized, and thus Slipchenko for example suggests abolishing the manpower-intensive army.

Slipchenko's ideas about sixth generation warfare and his ideas about how the Russian Armed Forces should be reorganized are clearly the most radical military-theoretical message emerging from post-Soviet Russia. As such, Slipchenko is probably the military theoretician who most closely has lived up to the ideal of the Soviet General Staff of refraining 'from mechanical extrapolation of existing trends into the future, apply laws of unity and the struggle of opposites, and seek out the root causes of change in forms and means of warfare'.[46] At the same time, the radicalism of Slipchenko could suggest that he might not warrant the attention given to him in this study. His most radical proposals for reform, such as abolishing the Army as a branch of the Armed Forces, have extremely few adherents.

However, his idea about sixth generation contactless warfare has attracted widespread attention, even among military planners who would not subscribe to many of his other ideas. Sixth generation warfare is regularly referred to by current top military leaders. Chief of the General Staff, General Nikolai Makarov, for example, stated in an article in September 2008 that:

our military theoreticians are now developing the concepts for a new, sixth genera-
tion warfare. In this type of warfare neither nuclear weapons nor people will do the
brunt of the fighting. The focus is on conventional high precision weapons, and
other weapons based on new physical principles.[47]

In a similar fashion, Chief of the Air Force, General Alexander Zelin, stated in March
2010 that in the period up to 2030 many countries, the USA first among them, will be
technologically capable of launching 'coordinated and precise attacks against any target
in Russia that they might want to hit'.[48] According to the modernist Aleksei Arbatov,
there is now a concerted campaign taking place in Russia with the aim of lifting the kinds
of threats Slipchenko talked about to the status of 'the greatest threat to Russian secu-
rity'. Arbatov continues by warning the US military establishment against ignoring the
growing Russian concern over the development of new US conventional long-range
precision-guided systems.[49]

The central role in future warfare of long-distance precision munitions is also recog-
nized by the traditionalists and modernists. Gareev identifies them as 'the decisive
weapons systems' in future war among modern states, but at the same time he also sees
them as constituting only the first stage of these wars. He differs sharply from Slipchenko
in that he believes the long-distance precision bombing will be followed first by air
mobile and special forces, and then by regular army forces.[50] Slipchenko claims future
wars will both start and end with the use of the new long-distance conventional precision
weapons.

Slipchenko does not use the concept 'network centric warfare' often, but he is very
clear on the critical role of communications and situational awareness in future wars.[51]
He is as clear about this as the traditionalists and modernists, but because of his
heavy focus on the strategic level, he does not really discuss network-centric warfare
much at the tactical and operational levels. There are other Russian military theorists,
such as for example Alexandr Kondratyev, who identify network-centric warfare as
revolutionary, but in the context of this article the concept cannot be portrayed as a
unique contribution to the Russian debate by the revolutionary school of thought.[52]
Rather, it is a concept and an ability that has many adherents within all three schools,
although they might see the ability's usefulness in slightly different ways.[53] To the extent
that there is resistance to the concept, however, that is mostly within the traditionalist
camp.

Slipchenko's opponents have in particular made two types of criticism with regard to
sixth generation warfare. First, they point out that air defence covering all or even most
of Russia's vulnerable civilian targets is just not possible because of the size of the country.
Second, they reject that the US would ever contemplate an attack on Russia with
conventional ballistic missiles as long as the country retains its nuclear capability.[54] On
this second point, however, there is an increasing feeling of uneasiness in Russia.
Slipchenko's skepticism about the real deterrent effect of nuclear arms against conven-
tional threats has roots back to the Cold War period. Already in the early 1980s, leading
Soviet military thinkers started to believe that a major war could come to be fought
without the use of nuclear weapons.[55] Also today many in the Russian military do
not feel totally safe behind the country's nuclear shield. This is probably part of the

explanation for the strongly negative Russian reactions to the US plans for developing long-distance conventional precision missiles (Prompt Global Strike – PGS).

The modernists

The modernists are a less unified group than the two previous ones. What they have in common is that they want to break with the Soviet military model, and adopt a balanced approach between technology and manpower. Like the revolutionaries, but in contrast to the traditionalists, the modernists also fully acknowledge the financial trade-off between technology and manpower. For example, the modernist Aleksei Arbatov has suggested that to afford a reasonably technologically updated military, manpower should be cut from one million to between 500,000 and 600,000, and at the same time military expenditure should rise to 3.5 percent of GDP.[56]

Other influential modernists include among others Vitalii Shlykov and Andrei Kokoshin. They are together with Arbatov influential both in terms of their writings and of their positions. Vitalii Shlykov had a life-long career in the military intelligence service GRU. He was one of the founders of the semi-official Council for Foreign and Military Policy in the early 1990s, and is currently a member of the defence ministry's civilian advisory council. Andrei Kokoshin was Deputy Minister of Defence 1992–97, secretary of the Security Council in 1998, and has been a Duma deputy for United Russia since 1998 (deputy leader of the party faction since 2008). Aleksei Arbatov was in the Duma's Defence Committee from 1993 to 2003 (from 1995 as deputy chairman), and has later held several positions as adviser to the Russian government on military policy in addition to various academic positions. In terms of the positions they have held or currently hold, all three can be labelled *okolovlastnye* (close to those in power), but at the same time they show great independence of thought in their writings. They can be sharp in their criticism of military policy, but are generally careful in their criticism of the political regime.

How influential they are is of course difficult to determine, but as an example, Vitalii Shlykov is by many considered to be the ideological father of the 2008 initiated radical restructuring of the Russian Armed Forces, the so-called Serdiukov-reforms (Anatolii Serdiukov is the Russian defence minister).[57] The main purpose of the Serdiukov reforms has been to transform the Russian military from a mobilization based to a standing structure. In addition, several efficiency enhancing elements such as a radical downsizing of the officer corps, introduction of NCOs, changes to the command structure, 'humanizing' of the military service and others have been implemented. Renewal of hardware and weapons systems and better control over military finances are also central elements of the reform.

Shlykov focuses in particular on four points in his writings: (1) the necessity of learning from others, first of all the US, (2) introduction of non-commissioned officers, (3) disbanding of the extremely extensive Soviet mobilization system, and (4) that the military organization needs to be controlled by a largely civilian ministry of defence. He believes the last point is crucial, because unless this happens military policy will never be anything more than the outcome of never-ending battles between the military branches.

More than the others, the modernists are concerned about the here and now and the near to medium future. They have little patience both with the historical arguments of the traditionalists and the futuristic arguments of the revolutionaries. This also means that threats to Russian security close to the country's borders are more important for the modernists than for the other schools. The modernists are significantly more concerned with the political instability of the Caucasus and Central Asia. On the issues of the West and China as security threats, they differ somewhat in their views. Some see very little potential for conflict, especially with the West, whereas others are more concerned.

Andrei Kokoshin is probably the modernist who most consistently has written about future war, as the titles of some of his recent publications indicate: *On the Political Understanding of Victory in Current War* (2004), *Political Science and Sociology in Military Strategy* (2005), *On the Revolution in Military Affairs in History and Today* (2006), and *Innovative Military Forces and the Revolution in Military Affairs* (2008) (all in Russian).[58] Because of his position as Deputy Chairman of the United Russia Party in the State Duma, he is also the modernist closest to the inner political circles in Russia.

In the same way as the traditionalists, Kokoshin also argues that Russia should opt for technological renewal without falling into the trap of what he calls 'vulgar technological determinism'.[59] He further agrees with the traditionalists that the technological renewal should in no way seek technological parity with the West. Russia should strive to create asymmetric countermeasures to the new Western technologies rather than replicas.[60] As an example, Kokoshin points to Soviet efforts in the 1980s to create asymmetric countermeasures against Ronald Reagan's star wars plans (SDI).[61]

Kokoshin also writes about Russian military culture, but here he is in quite strong disagreement with the traditionalists. While the latter praise the inherent strength of Russian military traditions, and claim that it would be wrong for Russia to break them, Kokoshin believes that in several instances it is absolutely necessary. In contrast to the traditionalists, who hail the Russian soldier's willingness to sacrifice his life for the fatherland, Kokoshin writes deploringly about the destructive Russian tradition of *chelovecheskaia zatratnost* – namely the dispensability of human life.[62] Similarly, Aleksei Arbatov maintains that 'the mass heroism and willingness to sacrifice' has more often than not been nullified by stupidity of command, unpreparedness of the oversized military organization and the irresponsibility of the political leadership.[63]

Thus, the modernists agree with the traditionalists on the need for technological renewal without reverting into technological determinism, and on the point about an asymmetric technological response to the Western technological lead. What differentiates them most is a dissimilar interpretation of Russian military traditions, and the fact that the modernists recognize that resource constraints lead to a trade-off between technology and manpower.

The modernists further agree with the revolutionaries (and also some traditionalists) on the necessity of introducing network-centric warfare. Network-centric warfare has in fact become a buzz-word in the Russian military, especially after the introduction of the Serdiukov reforms. It has long been recognized that command and control has been a particular Russian weakspot. This was confirmed again during the 2008 Russia–Georgia War.[64] There is a genuine fear that lack of technological progress in this area could seriously hamper Russian military capability in the future. Thus, in this particular

instance, similarity rather than asymmetry with the West seems to be sought both by traditionalists, modernists and revolutionaries.

Kokoshin also argues strongly for the introduction of network capabilities, but at the same time he sees the danger that this could become a case of 'vulgar technological determinism'. This is because of what he sees as another unfortunate Russian military tradition – the tendency to neglect the leadership aspect of military operations. Unless this habit is changed, he thinks the introduction of new network technologies could be of little use. Kokoshin is especially worried that the extremely hierarchical Russian tradition of command will collide with the implicit assumption in network-centric warfare of decentralized authority. He chides internal Russian military studies of network-centric warfare for rarely or never discussing the demands that the introduction of new technology will place on the adaptability of the personnel and of organizational procedures and routines.[65]

Some Russian writers tend to think that network-centric capabilities should be limited to the strategic and operational levels. The former mentioned idea of a blurring of the border between peace and war has, for example among many traditionalists, led to an interpretation of the concept of network-centric warfare as something taking place mostly at the highest strategic levels.[66] Thus, they have a tendency to underestimate the potential benefits of network centricity at the tactical level.[67] Many Russian military think, in contrast to Kokoshin, that officers at tactical levels should only have access to tactical information.[68]

Thus, the modernists are in general more concerned with the human-technology interface than the two other schools. Still, they differ internally with regard to what consequences this interface should have for the system of recruitment and education/training. Arbatov argues that especially the 2003 war in Iraq demonstrated that only a professional military is able to take full advantage of the possibilities given by new technologies.[69] Shlykov, on the other hand, thinks that the Russian Army has to be filled mainly by conscripts also in the future. His argument is that military efficiency depends mainly on the education and quality of the officer corps, and on the introduction of a well functioning body of non-commissioned officers. Given good officers, the Russian Army will be an efficient political instrument independent of whether it is filled by conscripts or professional soldiers.[70]

Military theory and the course of Russian military reform

Finally, we will take a look at the relationship between the different schools and actual military policy today and in the future.

Generally, it can be said that the two decades from the end of the Soviet Union to the start of the Serdiukov-reforms mostly reflected the ideas of the traditionalists. There were many statements and also policy initiatives along modernist lines, but very few were implemented. It is probably also fair to say that bottom-up lobbying had a strong – possibly the strongest – explanatory power on military policy throughout this period. The most prominent example here was the struggle to secure resources for their 'home branches' between General Igor Sergeyev from the Strategic Rocket Forces, Defence

Minister between 1997 and 2001, and Army General Anatolii Kvashnin, Chief of the General Staff from 1997 to 2004.

The initiation of the Serdiukov reforms from late 2008, however, radically shifted the reform to the modernist perspective. As stated above, the modernist Vitalii Shlykov is by many seen as the ideological father of the reforms. Chief of the General Staff, General Nikolai Makarov, stated explicitly in June 2009 that 'our military theory is outdated [referring here to the traditionalists], since the 1980s the West has transformed its military capacities to fight the wars of the future, but we have not done the same'.[71]

One explanation for the modernists coming out on top could be their closeness to the political leadership. However, it is questionable whether the modernists were any closer to political decision-makers than many of the traditionalists were *before* the initiation of reform. The main drawback for the traditionalists in the struggle over the content of reform, has probably been their strong association with military unwillingness to change since 1991. Further, it seems likely that the political leadership at least at some level bought the modernists' ideas of primary (Caucasus and Central Asia) and secondary (NATO and China) threats. The conventional forces, in particular the Army, is now being structured first of all to deal with threats close to Russia's borders. Deterrence of larger potential foes, such as NATO and China, is largely left to the nuclear forces.

Then again, one should probably be careful not to infer too much military-strategic thinking on the part of the political leadership in this context. An alternative, or additional, explanation for the modernist ascent could be that the political leadership basically just wanted a new team at the helm of military policy in order to get more out of the money being spent. In this interpretation, the politicians had only limited interest in theories about future threats and what type of armed forces that would best meet them. Anyhow, once Serdiukov had been given political backing for being tough on the military in terms of how they spent their money, there was also an opening for people with ideas about future war to put these into effect. In this interpretation; the intellectual impact of the modernists largely took place beneath the political radar.[72]

There is, nevertheless, as of today, no complete victory for the modernist school. Especially, the decision to maintain standing Armed Forces of one million men – many of whom will be conscripts – goes against the wishes of most modernists. Their main victories were (1) the scrapping of most of the old Soviet mobilization system, (2) the reorganization of the army from divisions to brigades, (3) the introduction of a non-commissioned officer corps, and (4) a radical cut in the overall number of officers. However, a partial setback for the modernists came with the new military doctrine adopted in February 2010. The ideas presented in the doctrine, especially its focus on NATO as a major challenge and the importance attached to the maintenance of a strong mobilization capability, were very much in line with the thoughts of the traditionalist school. It might be the case, however, that the writing of the military doctrine to some extent was thrown as a bone to the traditionalists as compensation for their losses in forming the content of the actual military reform. It is indicative of the doctrine's limited importance as a steering document that it was adopted one and a half years after radical reform had begun. Thus, the doctrine can emphasize mobilization capacity all it wants, but that does not change the fact that the actual reform did away with much of it.

The partial victory of the modernists is further moderated by a few 'revolutionary' break-throughs. First, the Russian military's embrace of network-centric warfare suggests significant impact from the revolutionary school. This move does not necessarily mean an acceptance of network-centric warfare as changing the character of war, but the enthusiasm for the idea suggests that its implementation is seen as crucial. Second, the already mentioned strongly increasing concern for the US development of conventional long-range precision ballistic missiles, suggests that the idea of 'sixth generation warfare' has gained substantial ground. It is too early to see very significant results of this growing concern in actually implemented policy, but the proposed higher priority for air defence systems in the defence order and the December 2010 decision to create an integrated air and cosmic defence command, suggest that the priorities associated with 'sixth generation warfare' thinking are beginning to be felt within the military organization.

Another indication is that the new short-distance air defence system Pantsyr, originally planned as army air defence, is now instead to be used as protection for the new long distance air defence system S–400. That is, long distance air defence of civilian and central military targets is given priority over air defence for the ground troops.[73] A much more significant indication is the early 2011 announcement that 70,000 new officer positions were to be created within air and cosmic defence. The Serdiukov reforms originally contained a provision for reducing the total number of officers from about 350,000 to 150,000. After the 2011 announcement the total figure is now 220,000, with all the new positions going to air and cosmic defence.

In summary, the Russian Armed Forces are currently reforming mostly in conformity with the modernist school of military theory. However, significant elements from the traditionalist school still linger on, and increasingly the ideas of the revolutionary school are taken seriously, especially in terms of arms procurement.

For the future of Russian military policy, however, there are two factors that are even more decisive that the relative standing of the three different schools of thought, namely military purchasing power and the state of the Russian defence industry. Military purchasing power should here be understood as a combination of the level of state revenues and of political willingness to spend on defence. It is obvious that all three schools, if they could decide military policy, would be able to spend any sums of additional money that came their way. However, the elasticity of their models is markedly different if purchasing power was to stagnate or decline. Basically, both the modernist and the revolutionary models, because of their higher demands on high tech and soldier professionalization, presuppose significantly higher defence spending than at present. Both the presently planned increases in defence spending until 2020, and probably also their continuation beyond that time, would be necessary in order to implement the modernist and revolutionary models.

The traditionalist model, on the other hand, can most likely be accommodated with the present or even lower levels of defence spending. This is true even if, as earlier stated, the traditionalists are the only ones not willing to recognize budget constraints. The main reason is that the traditionalist model is the only one that is compatible with the relatively speaking cheap option of a conscript army. Conscript armies can come in both cheap and expensive versions, high tech and highly professional ones cannot.

For the modernist and revolutionary models to work, however, ability and willingness to spend on defence would still not be enough. Their high tech focus also presupposes an arms industry that is able to convert the money into state of the art weapons in sufficient quantity. Currently, that is not the case. The majority of Russian defence enterprises suffered a blow in the 1990s and early 2000s from which they have yet to recover. State orders for weapons were more or less absent for most of the time. Some branches, notably air-defence, fighter aircraft, cruise missiles and a few others, were able to survive and even develop on the basis of export contracts, but for most of the industry that was not the case. The Russian arms industry is today troubled by high levels of corruption, lack of qualified personnel, old production equipment, archaic and inefficient management styles and considerable red tape and unhelpful meddling from the state bureaucracy. Thus, ability and willingness to spend on defence is not enough to make a modernist or revolutionary model possible, also a thorough reform of the defence industry is needed. If money is just thrown at the industry in the state of which it is today, there is every chance that the industry will just eat the funds and still deliver little both in terms of quantity and quality.

In order to achieve a revitalization of the arms industry, Russian authorities are promising to start a major structural reform in the near future. In addition, in May 2011 it was announced that the country in the years until 2020 will spend 3,000 billion roubles on modernization of the arms industry's means of production.[74] This figure comes on top of the 19,000–20,000 billion roubles already set aside for defence procurement for the armed forces until 2020. Sceptics claim that unless the whole of the Russian political economy is reformed, an isolated attempt at modernizing the arms industry is not likely to succeed either. Others point out that branches within the Russian arms industry function reasonably well already today, and that many others with some assistance should be able to achieve the same. Independent of who is right, success here seems to be a necessary precondition for the modernist or revolutionary models. Arms import, despite a recent upward trend, is for economic and political reasons not a sufficient alternative.

Thus, the conclusion to this study is that with military purchasing power at the current level or lower, and with an arms industry not successfully reformed, the Russian military is likely to resemble one or another version of the traditionalist model independent of which of the military theoretical schools that dominate decision-making. If, on the other hand, Russia is able and willing to spend even more on defence, and the arms industry is at least partially successfully reformed, then the struggle between the three schools takes on real importance.

Acknowledgements

Note on contributor

Tor Bukkvoll is a senior research fellow at the Norwegian Defence Research Establishment, and former researcher at the Peace Research Institute Oslo (PRIO).

Dr Bukkvoll is the author of *Ukraine and European Security* (Pinter Press 1997), as well as academic articles and book chapters on Russian and Ukrainian security and defence policy.

Notes

1 Russian military saying (*Zheleso ne voinet*).
2 See for example Todd Harrison, 'The New Guns Versus Butter Debate' (Center for Strategic and Budgetary Assesments 2010); Timothy Edmunds, 'The Defence Dilemma in Britain', *International Affairs* 86/2 (2010).
3 This is the author's own categorization, but it builds on Alexandr Golts' distinction between 'technologists' and 'magicians', and Igor Popov's distinction between 'conservatives' and 'innovators'. See Aleksandr Golts, 'Bremia Militarizma', *Otechestvennye zapisky*, No. 5 (2005); Igor Popov, 'Voennaia Mysl Sovremennoi Rossii', at <http://futurewarfare.narod.ru/theoryRF.html>.
4 For Western scepticism, see for example Jacob W. Kipp and Lester W. Grau, 'The Fog and Friction of Technology', *Military Review* (Sept.–Oct. 2001); Antulio Echevarria, *Challenging Transformation's Cliches* (Carlisle, PA: Strategic Studies Institute, US Army War College 2006); Colin S. Gray, *Recognizing and Understanding Revolutionary Change in Warfare: The Sovereignty of Context*, (Carlisle, PA: Strategic Studies Institute, US Army War College 2006); Stephen Biddle, 'Speed Kills? Reassessing the Role of Speed, Precision and Situational Awareness in the Fall of Saddam', *Journal of Strategic Studies* 30/1 (Feb. 2007); Christopher M. Schnaubelt, 'Whither the RMA?', *Parameters* (Autumn 2007); John Ferris, 'After the RMA: Contemporary Intelligence, Power and War', in George Kassimeris and John Buckley (eds), *The Ashgate Research Companion to Modern Warfare* (Farnham, UK: Ashgate 2010).
5 On the Western cottage industry of discovering generations of warfare see Antulio Echevarria, '4th, 5th and 6th Generation War', paper presented at the International Studies Association Annual Convention (New Orleans 2010).
6 Jan Fredrik Geiner, Egil Daltveit and Palle Ydstebø, 'Trender I Militære Operasjoner', FFI-rapport 2010/00692, <http://rapporter.ffi.no/rapporter/2010/00692.pdf>.
7 Shimon Naveh, *In Pursuit of Military Excellence – the Evolution of Operational Theory*, in Gabriel Gorodetsky (ed.), The Cummings Center Series (London: Frank Cass 1997), 164. See also Azar Gat, *A History of Military Thought* (Oxford: OUP 2001), 632–9, and Andrei Kokoshin, *Soviet Strategic Thought 1917–91* (Cambridge, MA: The MIT Press 1998), 19–40.
8 Stephen Peter Rosen, 'The Impact of the Office of Net Assessment on the American Military in the Matter of the Revolution in Military Affairs', *Journal of Strategic Studies* 33/4 (Aug. 2010), 469–82.
9 David A. Deptula, 'Effects-Based Operations: Change in the Nature of Warfare', in *Defense and Airpower* (2001), 30, note 60, the reference is indirect through work done by Mary Fitzgerald, at <www.aef.org/pub/psbook.pdf>.
10 Dima Adamsky, *The Culture of Military Innovation* (Stanford, CA: Stanford UP 2010), 49.
11 Ibid.
12 Vitalii Strugovets, 'Genshtab Postavlen Pod Vertikal Vlasti', *Russkii kur'er,* 15 June 2004.
13 'Voennye akademiki ne v favore', *Nezavisimoe Voennoe Obozrenie*, 18 Jan. 2008.
14 Makhmud Gareev, 'Itogi Desiatiletnosti Akademii Voennykh Nauk 2001–2005 I Osnovnye Zadachii Akademii', *Voennaia mysl*, No. 2 (2006).
15 'Voennie akademiki ne v favore'
16 Makhmud Gareev and Vladimir Slipchenko, *Budushchaia Voina* (Moscow: Politru OGI 2005), 11.
17 Popov, 'Voennaia Mysl Sovremennoi Rossii'
18 Ibid.
19 Adamsky, *The Culture of Military Innovation*, 42–6
20 Gareev and Slipchenko, *Budushchaia Voina*, 103.
21 Adamsky, *Culture of Military Innovation*, 42.
22 Makhmud Gareev, 'Opyt Pobeditelei V Velikoi Voine Ne Mozhet Ustaret', *Nezavisimoe voennoe obozrenie*, 12 March 2010.
23 Makhmud Gareev, 'Problemy Strategicheskogo Sderzhivania V Sovremennykh Usloviakh', in R.M. Timofeev (ed.), *Bezopasnost Rossii – 2010* (Moskva: Triumfalnaia Arka 2009).
24 Boris Cheltsov and Sergei Volkov, 'Setevye Voiny Xx Veka', *Vozdushno-kosmiches-kaia oborona* 41/4 (2008).

25 Thomas P. Barnett, 'The Pentagon's New Map', *Esquire,* 1 March 2003, 5 <www.esquire.com/featyres/ESQ0303-MAR_WARPRIMER>.
26 Alexandr Burutin, 'O Nekotorykh Aspektakh Voenno-Technicheskoi Politiki Gosudarstvo V Novoi Redaktsii Voennoi Doktriny Rossiiskoi Federatsii', in A. Yusupov (ed.), *K Novoi Redaktsii Voennoi Doktriny Rossiiskoi Federatsii* (Moscow: URSS 2009), 105.
27 Ibid., 111.
28 Cheltsov and Volkov, 'Setevye Voiny Xx Veka'.
29 Popov, 'Voennaia Mysl Sovremennoi Rossii' and Gareev and Slipchenko, *Budushchaia Voina*, 9.
30 Popov, 'Voennaia Mysl Sovremennoi Rossii'.
31 Vladimir Slipchenko, *Voiny Novogo Pokolenia – Distantsionnye I Bezkontaktnye* (Moscow: Olma-Press 2004), 32–34.
32 Gareev and Slipchenko, *Budushchaia Voina*, 42 and 54.
33 Slipchenko, *Voiny Novogo Pokolenia – Distantsionnye I Bezkontaktnye*, 51.
34 Ibid., 329.
35 Ibid., 335.
36 Vladimir Slipchenko, 'K Kakoi Voine Dolzhny Gotovitsia Vooruzhennye Sily', *Otechestvennye zapisky*, No. 8 (2002), 4.
37 Slipchenko, *Voiny Novogo Pokolenia – Distantsionnye I Bezkontaktnye*, 325.
38 Ibid., 318–20
39 Ibid., 323.
40 Gareev and Slipchenko, *Budushchaia Voina*, 13.
41 Slipchenko, *Voiny Novogo Pokolenia – Distantsionnye I Bezkontaktnye*, 323.
42 Ibid., 325 and Gareev and Slipchenko, *Budushchaia Voina*, 44.
43 Slipchenko, *Voiny Novogo Pokolenia – Distantsionnye I Bezkontaktnye*, 326 and 335.
44 Ibid., 328.
45 Sergei Chekinov, 'Prognozirovanie Tendentsii Voennogo Iskusstva V Nachalnom Periode Xxi Veka', *Voennaia mysl*, No. 7 (2010), 22.
46 Adamsky, *Culture of Military Innovation*, 48.
47 The quote from Makarov is reprinted in Mikhail Rastopshin, 'Voennaia Mysl Protiv Generalnogo Shtaba', *Nezavisimoe Voennoe Obozrenie*, 12 March 2010.
48 Andrei Kisliakov, 'Ballisticheskie Rakety I Glonass V 'Bardachke', *Nezavisimoe voennoe obozrenie*, 12 March 2010.
49 Aleksei Arbatov, *Advancing US–Russian Security Cooperation*, (Washington DC: Carnegie Endowment for International Peace 2010), 6.
50 Makhmud Gareev, *Srazhenia Na Voenno-Istoricheskom Fronte* (Moscow: INSAN Publishers 2010), 607.
51 Slipchenko, *Voiny Novogo Pokolenia – Distantsionnye I Bezkontaktnye*, 211–30.
52 Alexandr Kondratyev, 'Stavka Na Voyny Budushchego', *Nezavisimoe voennoe obozrenie*, 27 June 2008.
53 For a detailed study of the Russian perspectives on network-centric warfare, see Roger N. McDermott, *Russian Perspective on Network-Centric Warfare*, (Ft Leavenworth, KS: Foreign Military Studies Office 2010), <http://fmso.leavenworth.army.mil/Collaboration/international/McDermott/Network-Centric-Warfare.pdf>.
54 See for example Aleksei Arbatov, 'Strategicheskii Siurrealizm Somnitelnykh Konseptsii', *Nezavisimoe voennoe obozrenie*, 5 March 2010.
55 Adamsky, *Culture of Military Innovation*, 29.
56 Author's interview with Aleksei Arbatov, Moscow, Sept. 2007, and Aleksei Arbatov, *Uravnenie Bezopasnosti* (Moscow: RODP 'Yabloko' 2010), 163.
57 General impression from talks with Russian military experts and journalists in Moscow in June 2010.
58 Andrei Kokoshin, *O Politicheskom Smysle Pobedy V Sovremennoi Voine* (Moscow: URSS 2004), *Politilogia I Sotsiologia Voennoi Strategii* (Moscow: URSS 2005), *O Revoliutsii V Voennom Dele V Proshlom I Nastoiashchem* (Moscow: URSS 2006), *Innovatsionnye Vooruzhennye Sily I Revoliutsia V Voennom Dele* (Moscow: URSS 2008).
59 Aleksandr Golts, 'O Revoliutsii V Voennom Dele V Proshlom I Nastoiashchem – Interviu S Andreiem Kokoshinym', *Otechestvennye zapisky*, No. 5 (2005), 1.
60 Ibid., 8.
61 Kokoshin, *Innovatsionnye Vooruzhennye Sily I Revoliutsia V Voennom Dele, 7*.

62 Golts, 'O Revoliutsii V Voennom Dele V Proshlom I Nastoiashchem – Interviu S Andreiem Kokoshinym', 8.
63 Aleksei Arbatov, 'Voennaia Reforma V Svete Chuzhykh Oshibok', *Nezavisimoe voennoe obozrenie*, 23 May 2003.
64 Carolina Vendil Pallin and Fredrik Westerlund, 'Russia's War in Georgia: Lessons and Consequences', *Small Wars & Insurgencies* 20/2 (2009), 407–8.
65 Kokoshin, *Innovatsionnye Vooruzhennye Sily I Revoliutsia V Voennom Dele*, 5.
66 Alexandr Kondratiev, 'Borba Za Informatsiu Na Osnove Informatsii', *Nezavisimoe voennoe obozrenie*, 24 Oct. 2008.
67 Kokoshin, *Innovatsionnye Vooruzhennye Sily I Revoliutsia V Voennom Dele*, 198–9.
68 See for example A.E. Kondratiev, 'Problemnye Voprosy Issledovania Novykh Setetsentricheskikh Konseptsii Vooruzhennykh Sil Vedushchikh Zarubezhnykh Stran', *Voennaia mysl*, No. 11 (2009), 63.
69 Arbatov, 'Voennaia Reforma V Svete Chuzhykh Oshibok.'
70 Interview with Vitalii Shlykov at the radio station *Ekho Moskvy*, 28 Feb. 2010.
71 Pavel Felgengauer, 'Russian Military Weakness Increases Importance of Strategic Nuclear Forces', *Eurasia Daily Monitor*, 11 June 2009.
72 This is the interpretation for example of Russian military expert Ivan Safranchuk. Author's interview with Safranchuk, Moscow, April 2010.
73 Viktor Miasnikov, 'Pantsyr-S Vstaniet Na Zashchitu S-400', *Nezavisimoe voennoe obozrenie*, 26 March 2010.
74 <http://premier.ru>.

Bibliography

Adamsky, Dima, *The Culture of Military Innovation* (Stanford, CA: Stanford UP 2010).

Arbatov, Aleksei, *Uravnenie Bezopasnosti* (Moscow: RODP 'Yabloko' 2010).

Arbatov, Alexsei, *Advancing US–Russian Security Cooperation* (Washington DC: Carnegie Endowment for International Peace 2010).

Barnett, Thomas P., 'The Pentagon's New Map', *Esquire*, 3 March 2003.

Biddle, Stephen, 'Speed Kills? Reassessing the Role of Speed, Precision and Situational Awareness in the Fall of Saddam', *Journal of Strategic Studies* 30/1 (Feb. 2007).

Burutin, Alexandr, 'O Nekotorykh Aspektakh Voenno-Technicheskoi Politiki Gosudarstvo V Novoi Redaktsii Voennoi Doktriny Rossiiskoi Federatsii', in A. Yusupov (ed.), *K novoi Redaktsii Voennoi Doktriny Rossiiskoi Federatsii* (Moscow: URSS 2009).

Chekinov, Sergei, 'Prognozirovanie Tendentsii Voennogo Iskusstva V Nachalnom Periode Xxi Veka', *Voennaia mysl*, No. 7 (2010).

Cheltsov, Boris and Sergei Volkov, 'Setevye Voiny Xx Veka', *Vozdushno-kosmicheskaia oborona*, 41/4 (2008).

Deptula, David A., 'Effects-Based Operations: Change in the Nature of Warfare', *Defense and Airpower*, 2001.

Echevarria, Antulio, *Challenging Transformation's Cliches* (Carlisle, PA: Strategic Studies Institute, US Army War College 2006).

Echevarria, Antulio, '4th, 5th and 6th Generation War', paper presented at the International Studies Association Annual Convention, New Orleans 2010.

Edmunds, Timothy, 'The Defence Dilemma in Britain', *International Affairs* 86/2 (2010).

Ferris, John, 'After the RMA: Contemporary Intelligence, Power and War', in George Kassimeris and John Buckley (eds), *The Ashgate Research Companion to Modern Warfare* (Farnham, UK: Ashgate 2010).

Gareev, Makhmud, 'Itogi Desiatiletnosti Akademii Voennykh Nauk 2001–2005 I Osnovnye Zadachii Akademii', *Voennaia mysl*, No. 2 (2006).

Gareev, Makhmud, 'Problemy Strategicheskogo Sderzhivania V Sovremennykh Usloviakh', in R.M. Timoshev, *Bezopasnost Rossii – 2010* (Moskva: Triumfalnaia Arka 2009).

Gareev, Makhmud, *Srazhenia Na Voenno-Istoricheskom Fronte* (Moscow: INSAN Publishers 2010).

Gareev, Makhmud and Vladimir Slipchenko, *Budushchaia Voina* (Moscow: Politru OGI 2005).

Gat, Azar, *A History of Military Thought* (Oxford: OUP 2001).

Geiner, Jan Fredrik, Egil Daltveit and Palle Ydstebø, 'Trender I Militære Operasjoner', FFI-rapport 2010/00692, <http://rapporter.ffi.no/rapporter/2010/00692.pdf>.

Golts, Aleksandr, 'Bremia Militarizma', *Otechestvennye zapisky* No. 5 (2005).

Golts, Aleksandr, 'O Revoliutsii V Voennom Dele V Proshlom I Nastoiashchem – Interviu S Andreiem Kokoshinym', *Otechestvennye zapisky*, No. 5 (2005).

Gray, Colin S., *Recognizing and Understanding Revolutionary Change in Warfare: The Sovereignty of Context* (Carlisle: PA: Strategic Studies Institute, US Army War College 2006).

Harrison, Todd, 'The New Guns Versus Butter Debate', Center for Strategic and Budgetary Assements, 2010.

Kipp, Jacob W. and Lester W. Grau, 'The Fog and Friction of Technology', *Military Review* (Sept–Oct. 2001).

Kokoshin, Andrei, *Soviet Strategic Thought 1917–91* (Cambridge, MA: The MIT Press 1998).

Kokoshin, Andrei, *O Politicheskom Smysle Pobedy V Sovremennoi Voine* (Moscow: URSS 2004).

Kokoshin, Andrei, *Politilogia I Sotsiologia Voennoi Strategii* (Moscow: URSS 2005).

Kokoshin, Andrei, *O Revoliutsii V Voennom Dele V Proshlom I Nastoiashchem* (Moscow: URSS 2006).

Kokoshin, Andrei, *Innovatsionnye Vooruzhennye Sily I Revoliutsia V Voennom Dele* (Moscow: URSS 2008).

Kondratiev, A.E. 'Problemnye Voprosy Issledovania Novykh Setetsentricheskikh Konseptsii Vooruzhennykh Sil Vedushchikh Zarubezhnykh Stran', *Voennaia mysl*, No. 11 (2009).

McDermott, Roger N., *Russian Perspective on Network-Centric Warfare* (Ft Leavenworth, KS: Foreign Military Studies Office 2010).

Naveh, Shimon, *In Pursuit of Military Excellence – the Evolution of Operational Theory*. The Cummings Center Series (London: Frank Cass 1997).

Pallin, Carolina Vendil and Fredrik Westerlund 'Russia's War in Georgia: Lessons and Consequences', *Small Wars & Insurgencies* 20/2 (2009), 407–8.

Popov, Igor, 'Voennaia Mysl Sovremennoi Rossii', <http://futurewarfare.narod.ru/theoryRF.html>.

Rosen, Stephen Peter, 'The Impact of the Office of Net Assessment on the American Military in the Matter of the Revolution in Military Affairs', *Journal of Strategic Studies* 33/4 (Aug. 2010).

Schnaubelt, Christopher M, 'Whither the RMA?', *Parameters* (Autumn 2007).

Slipchenko, Vladimir, 'K Kakoi Voine Dolzhny Gotovitsia Vooruzhennye Sily', *Otechestvennye zapisky* No. 8 (2002).

Slipchenko, Vladimir, *Voiny Novogo Pokolenia – Distantsionnye I Bezkontaktnye* (Moscow: Olma-Press 2004).

22 From Kadesh to Kandahar

Military theory and the future of war

Michael Evans

Only the dead have seen the end of war.

<div align="right">PLATO</div>

As the world enters the twenty-first century, it appears to be in the midst of revolutionary shifts in the character of international security, with the forces of information technology and globalization seemingly transforming the theory and practice of war. In retrospect, it is now possible to see the decade between the collapse of Soviet communism in August 1991 and the attacks on the Pentagon and the World Trade Center in September 2001 as an era of the unexpected. No one in the West expected, still less predicted, the fall of the Soviet Union; the Iraqi invasion of Kuwait and the Gulf War; the Asian financial crisis; the Indian and Pakistani nuclear detonations; or of course, the events of 11 September.

Over the past decade, armed conflict has not remained within the traditional parameters of conventional warfare between rival states. From Somalia through Bosnia to Kosovo, East Timor, and Afghanistan, the face of war has assumed bewildering expressions. Under new global security conditions, the postmodern has collided with the premodern, the cosmopolitan has confronted the parochial, while the Westphalian state system has been challenged by new substate and transstate forces. Conventional high-tech Western armed forces have had to come to terms with a world of failed states populated by ethnic paramilitaries, of rogue regimes equipped with ballistic missiles and poison gas; and of radical extremists embracing a philosophy of mass-casualty terrorism.

For Western policy makers and military professionals these are deeply perplexing times; war seems more dynamic and chameleon-like than ever before. There are pressing questions: What is the future of war in conditions of great flux? Can traditional ideas of military power continue to dominate in an age of both globalization and fragmentation? What is the meaning of Western military supremacy in an era when democratic civilization—as demonstrated by the events of 11 September—is highly vulnerable to unexpected and unorthodox threats?

This article seeks to provide some answers to these questions. It adopts an approach reflecting a conviction that while events are always impossible to predict, it is possible to undertake intelligent analysis of trends in order to make some interim judgments about the kind of military conditions that might emerge in the near future. The article explores

four areas. First, the fragmentation of the international system in the 1990s is analyzed in an attempt to demonstrate how new political conditions caused a diffusion of conflict modes that in turn have brought great uncertainty to the world of military analysts. Second, the main theories of war that emerged in the 1990s and the complexity these brought to traditional military thinking are examined. Third, a snapshot is provided of some of the most important challenges facing the West in terms of the theory and practice of the military art over the next decade and a half. Finally, some of the likely characteristics of warfare over the next decade are identified and subjected to tentative analysis.

War in the 1990s: the diffusion of conflict

In the 1990s there appears to have been a major transition in international relations away from a mainly state-centered system toward one marked by greater interdependence and interconnectedness. This trend toward interconnectedness was propelled by the dual impact of globalization and its handmaiden, the information revolution. Together, these two forces appeared to have altered the context within which modern states operate, bringing about an apparent redistribution of power among states, markets, and civil society.[1]

From a military perspective, the globalization of the last decade is perhaps best described as a process in which space and time have been so compressed by technology as to permit distant actions to have local effects, and vice versa. The international system that emerged by the beginning of the twenty-first century was an interconnected world order in which regional and local military developments could be of global significance.

Defense analysts quickly discovered that conflict and disorder anywhere in the world could be quickly transmitted everywhere—and invested with crisis—by a pervasive global communications media, epitomized by the Cable News Network. It was also discovered that globalization is not a homogenous process but contains a striking paradox in that it brings about both convergence and divergence. The notion of interconnectedness and a heightened sense of global consciousness are paralleled by polarization and particularism. As President William Clinton put it in April 1999, the West finds itself engaged in "a great battle between the forces of integration and the forces of disintegration; [between] the forces of globalism and the forces of tribalism; [of the forces] of oppression against [those of] empowerment."[2]

In effect, by 2001 the contemporary international security system had bifurcated—that is, it had split between a traditional twentieth-century, state-centered paradigm and new twenty-first-century substate and transstate strata. The great change in the early twenty-first-century international system from that of the last quarter of the twentieth century is the transition away from a dominant state-centric structure toward one marked by a greater number of substate and transstate actors. With bifurcation came a reduction in the relative significance of strategic geography, simply because the globalization of the information era appeared no longer to allow any state or society to retreat behind physical or moral borders.[3]

It is very important to understand clearly what is meant by the "relative decline" of strategic geography. In no sense does such a phrase imply "the end of geography" in

the same sense that Francis Fukuyama famously spoke of "the end of history."[4] In terms of logistics, campaign planning, and topographical analysis, geography remains fundamental to the art of war, while geopolitics remains an important component of statecraft.[5] Nonetheless, a shift away from territoriality toward connectedness has diminished the effect of strategic geography as a primary rationale for defining a nation's defense and national security postures. The process of this transformation—in which older forms of linear conflict have been supplemented by new forms of nonlinear conflict—has been recognized by both Western and non-Western strategists. For example, the leading American strategic analyst Phillip Bobbitt has observed, "National security will cease to be defined in terms of borders alone because both the links among societies as well as the attacks on them exist in psychological and infrastructural dimensions, not on an invaded plain marked by the seizure and holding of territory."[6] Similarly, two Chinese strategists have argued that we are entering an age of un-restricted warfare in which "there is no territory that cannot be surpassed; there is no means which cannot be used in . . . war; and there is no territory or method which cannot be used in combination."[7]

The result of globalization over the past ten years has been the development of an unpredictable and complex pattern of armed conflict. Under conditions of global strategic bifurcation the old distinctions—between civil and international conflict, between internal and external security, and between national and societal security—began to erode. It has become clear that in an era in which various transnational and substate forces were greatly empowered by technology, such issues as civil conflict, terrorism, and the proliferation of weapons of mass destruction could no longer be easily quarantined within states or regions. From the early 1990s onward, these phenomena emerged as global strategic threats precisely because they acted to blur the distinction between internal and external crises. Under new conditions, transnational and substate forces threaten not just states but entire societies and thus the fabric of international stability itself. Consequently, traditional ideas about warfare have come under challenge as the political, economic, and military dimen-sions of security have more closely merged and state-on-state war seems to have been supplemented by new forms of substate and transstate conflict.[8]

The changing character of conflict and war mirrored the bifurcation of the inter-national security system in the 1990s. The various views expressed about the future of military conflict reflected the post–Cold War fragmentation of international security and the diffusion of contemporary war into a variety of different modes. War became at once modern (reflecting conventional warfare between states), postmodern (reflecting the West's cosmopolitan political values of limited war, peace enforcement, and human-itarian military intervention), and premodern (reflecting a mix of substate and transtate warfare based on the age-old politics of identity, extremism, and particularism).[9] It is important to note that none of these categories represents neatly divided compartments of activity; they overlap and interact with each other. The U.S. Marine Corps's recent doctrine of the "three-block war"—in which troops may be engaged in a conventional firefight, peace operations, and humanitarian relief simultaneously in a single small area—captures the essence of this complex interaction.[10]

However, if modern, postmodern, and premodern forms of war overlap with each other, each mode has distinctive features. Modern war remains symbolized by a classical

doctrine of "encounter battles," collisions of rival states' armed forces moving on land, in air, and at sea. This is a mode of classical warfare that can be traced back to the first properly recorded battle in history, in which the Egyptians defeated the Hittites in a chariot and infantry battle at Kadesh in 1285 B.C. The most recent model (at this writing) of armed conflict by encounter battle is the 1991 Gulf War, when Western and Iraqi forces employing missiles, tanks, and mechanized infantry clashed in the deserts of Kuwait.

In the West's public consciousness, modern war is based on high technology and the conventional force-on-force warfare of the kind associated with the two world wars, Korea, and the Gulf. In contrast, postmodern war is mainly characterized by the extremes of Western risk aversion, since for the Western powers the stakes seldom involve issues of vital security or national survival. Postmodern war is based on high-tech aerospace power, casualty limitation, and cautious exit strategies, such as we saw during the Kosovo conflict of 1999. In many key respects, the war over Kosovo was the model of a postmodern conflict. It was, to borrow David Halberstam's ironic phrase, "war in a time of peace"—a conflict carefully calibrated, enabled by high-tech weaponry, with its course determined by Western opinion polls.[11] However, postmodern conflict based around high-technology aerospace power has created its own antithesis— asymmetric warfare, including the threat of weapons of mass destruction, waged against Western society.[12]

For its part, premodern war is symbolized by the images of "blood and iron" the West now allegedly abhors. Premodern war is essentially social rather than technological in character; it is an expression of the existential rather than the instrumental aspect of warfare.[13] Those who wage such struggles may choose to sport middle-class suits and exploit the spread of advanced technology, but their mind-sets are mixtures of the antimodern, the millenarian, and the tribal. Such radicals embody what Pierre Hassner has called "the dialectic of the bourgeois and the barbarian."[14] Premodern conflict merges unconventional—to use the term du jour, asymmetric—warfare methods with the conventional or semiconventional military activities of failed states. The premodern model of conflict also tends to exploit the rise of nonstate actors, cultural identity politics, and ethnopolitical conflict. In many respects, premodern war represents a cultural revolt against the philosophy of Western liberal globalism; it is a conscious rejection of the universal values based on cosmopolitan democracy that followed Western victory in the Cold War. For many premodern radicals, the social order offered by globalization is anathema, it appears to them a facsimile of the secular, materialistic, and trivial world inhabited by Homer Simpson. For millenarian radicals of political Islam like Osama Bin Laden, the West's alleged cults of hedonistic individuality and intellectual relativism threaten societies that seek to define themselves by collective spirituality and timeless cultural traditions.[15]

Premodern struggles embrace aspects of substate or intrastate civil conflict and ethnic cleansing ranging from Bosnia through Somalia to East Timor. Unlike the old nationalliberation insurgents of the Cold War era, premodern radicals are more concerned with age-old cultural identity than the universal class ideology of Marxism, with a strategy of population displacement rather than winning popular support; and with sectarianism and secession rather than building inclusive model societies. One of the biggest changes

in comtemporary military affairs, then, has been the obsolescence of the Cold War political model of unconventional warfare and, as a result, of much of the West's counterinsurgency theory.[16]

When distilled to basics, these three overlapping models of modern, postmodern, and premodern war provide us with two vividly contrasting images of future conflict—one that is mainly symmetric and one largely asymmetric. On one hand, we have the blend of modern and postmodern war seen in the 1991 Gulf War and waged in the air over Kosovo in 1999 to serve as a grim metaphor of Western supremacy in any conventional conflict. However, on another level, we are confronted with a strange mixture of premodern and postmodern conflict—a world of asymmetric and ethnopolitical warfare—in which machetes and Microsoft merge, and apocalyptic millenarians wearing Reeboks and Raybans dream of acquiring weapons of mass destruction. To use a Hollywood analogy, it is as if the West's Buck Rogers were now lined up against assorted road warriors from the devastated society portrayed in the "Mad Max" films.

Military theory in the 1990s

The fragmentation of war has been mirrored in the world of strategic analysis. In the 1990s, military theory reflected the rapid diffusion of conflict following the end of the bipolar Cold War world. Multiple new theories of armed conflict appeared in the first half of the 1990s. At the beginning of the decade, the American analyst John Mueller gave us the "obsolescence of major war" theory, which argued that war in the advanced West was as outmoded as slavery and dueling.[17] The Israeli scholar Martin van Creveld followed Mueller by declaring that the Gulf War was a historical freak, a throwback to World War II rather than a vision of twenty-first-century war. Van Creveld argued that the long era of interstate war first codified by the Prussian philosopher Carl von Clausewitz in the early nineteenth century had ended. What he described as Clausewitzian "trinitarian war"—based on the nexus between people, government, and armed forces—was dead, and Western military theory derived from classical warfare had become obsolescent.[18]

The American futurists Alvin and Heidi Toffler then gave us the theory of "third wave" high-technology information warfare that helped initiate the "revolution in military affairs" debate.[19] According to the Tofflers and the information-age warfare theorists who followed them, the Gulf War provided a glimpse of postmodern war as the realm of high technology. Precision strike, "dominant battlespace knowledge," and stealth platforms would shape future conflict. In the 1990s RMA-style ideas dominated American force planning for a future based on fighting two major theater wars, as enshrined in the Pentagon's blueprint *Joint Vision 2010.*

In contrast, military writers like Robert Kaplan, Philip Cerny, and Ralph Peters proceeded to give us a vision of future war in which the form of social organization involved was far more important than the level of technology employed.[20] For Kaplan, the war of the future was the "coming anarchy" of a Hobbesian world of failed states; for Cerny it was the "neomedievalism" of warlordism and violent disintegration; and for Peters it was a struggle by Western forces waged against a world of warrior cultures

and paramilitaries from Mogadishu to Grozny. In 1996 Samuel P. Huntington published his seminal study of a coming "clash of civilizations" in which conflict between world cultures and "fault-line wars" would dominate the geopolitical future.[21] Finally, in 1999, the British analyst Mary Kaldor put forward a theory of "new wars" in which identity politics and the privatization of violence would challenge the new global order.[22]

By the turn of the century, the West was awash in a world of competing ideas about the future of armed conflict. War and conflict had, in effect, split like an unraveling rope's end into a multiplicity of strands. War could be whatever one sought in the cookbook of theory: it could be desert combat in the Gulf, street fighting in Grozny, or something between the two. Armed conflict could be asymmetric or low-intensity style "fourth generation" conflict waged by guerrillas and terrorists against the West's conventional military supremacy. In addition, the ominous New Terrorism of nuclear, chemical, and biological warfare conducted by rogue nations and nonstate entities was also viewed by some analysts as representing a form of "nontraditional warfare."[23]

From theory to practice: the challenge of future war

Given the proliferation of military theory and uncertain political conditions, what are the possible contours of future warfare over the next decade? What cautious speculations can we make about emerging trends? In September 1999, the bipartisan U.S. (Hart-Rudman) Commission on National Security/Twenty-First Century stated:

> The future strategic environment will . . . be one of considerable turbulence . . . The international system will be so fluid and complex that to think intelligently about military issues will mean taking an integrated view of political, social, technological, and economic developments. Only a broad definition of national security is appropriate to such a circumstance. In short we have entered an age in which many of the fundamental assumptions that steered us through the chilly waters of the Cold War require rethinking . . . The very facts of military reality are changing, and that bears serious and concentrated reflection.[24]

If the Hart-Rudman Commission's judgment about the facts of military reality changing is correct—and many, including the present author, believe it is—those concerned with preparing for armed conflict in the early twenty-first century must expect to confront a range of old, new, and hybrid forms of armed conflict. During the Cold War, the West confronted a unidimensional threat from the Marxist-Leninist Soviet Union—an adversary whose motives were certain and whose moves were predictable. In the new century, such conditions no longer apply. In the words of U.S. secretary of defense, Donald H. Rumsfeld, new military thinking is now required to arm Western societies "against the unknown, the uncertain, the unseen, and the unexpected."[25]

It has become imperative that all concerned with security issues pay greater attention to the merging of previously discrete forms of war. The conceptual basis for the study of warfare in the West must now be broadened to include a rigorous study of the interaction between interstate, substate, and transstate conflict and of the diffusion of

contemporary military capabilities. We have to recognize that in an interconnected age, linkage and interdependence seem to pervade all aspects of armed conflict. Military analysts and force-structure specialists need to concentrate on the multifunctional use of force in highly complex operations. In addition, military professionals must learn to embrace the challenges of proportion, coercion, and dissuasion as well as the older tradition of battlefield destruction. In particular, what the U.S. Hart-Rudman Commission has described as "the spectrum of symmetrical and asymmetrical threats we anticipate over the next quarter century" must receive increased attention from both military theorists and policy makers.[26] In short, the challenge is to prepare for full-spectrum conflict.

The task will be much harder than many defense analysts realize. The notion of a spectrum of conflict is not a new idea, but for most of the Cold War the Western understanding of war was based on generic intellectual categories of "conventional" (high-intensity) and "unconventional" (low-intensity) conflict. Most in the field of strategic studies thought in terms of separate worlds of conventional interstate (or high-intensity) and unconventional intrastate (or low-intensity) military activity. Unfortunately, the spectrum of conflict that is emerging in the early twenty-first century is distinguished by merged categories, multidimensionality, and unprecedented interaction.[27]

In an era when all security issues are interconnected and when the national security of Western states has become critically dependent on international security, single-scenario strategies and rigid military force structures have become anachronistic. Traditional concepts of deterrence and defense need to be supplemented by new doctrines of security preemption, security prevention, and expeditionary warfare. Moreover, the clear separation of peace and war must be supplemented by an acknowledgment that modes of war have merged. In a new age marked by networks and instant communications, the need is for advanced military forces with skills useful across a range of tasks that may involve preventive deployment, preemptive strike, war fighting, peace enforcement, traditional peacekeeping and peace building, and counterterrorism.[28]

However, the intellectual challenge facing military professionals is not, as Martin van Creveld would have us believe, to consign Carl von Clausewitz and two thousand years of Western military knowledge to the dustbin of history. Rather, the task is to learn how to fight efficiently across the spectrum of conflict. No responsible Western military theorist can accept at face value the thesis of the "obsolescence of conventional war" or the paradigm of asymmetric warfare as primary force planning or doctrinal determinants. In a dangerous and unpredictable world, military professionals and their political masters must prepare to fight in conditions of a "high-low mix"—to be ready to tame the big wildcats and not simply the vicious rodents, to be able to fight troops like Iraq's former Republican Guard as well as Taliban, al-Qa'ida militia, and terrorists. As every good operational commander knows, in the military art one can "trade down," but one can never "trade up." Moreover, all the evidence indicates that success in peace-support operations requires the kinds of conventional firepower, mobility and force protection available only to military establishments that are optimized for conventional warfighting.[29]

Readying ourselves for conventional war does not, however, absolve us from undertaking a major transformation in the way we think about the use of military force. The

most pressing intellectual task at the crossroads of the old and new centuries is rapid adaptation to new and merging forms of conflict. In the West we have to reconcile how we would like to fight with how we might *have* to fight. We must try to synthesize relevant features from the massive literature on the classical Gulf War/RMA model of warfare with the changing reality of conflict—both conventional and unconventional—as it presents itself. We have to undertake an intellectual exploration of the growing interaction between interstate, substate, and transstate conflict and conduct a rigorous investigation of the phenomenon of merging war forms—internal, international, postmodern, modern, and premodern.

The merging of modes of armed conflict suggests an era of warfare quite different from that of the recent past. Fighting in the future may involve conventional armies, guerrilla bands, independent and state-directed terrorist groups, specialized antiterrorist units, and private militias. Terrorist attacks might evolve into classic guerrilla warfare and then escalate to conventional conflict. Alternatively, fighting could be conducted on several levels at once. The possibility of continuous, sporadic, armed conflict, its engagements blurred together in time and space, waged on several levels by a large array of national and subnational forces, means that the reality of war in the first decade of the twenty-first century is likely to transcend a neat division into distinct categories, symmetry and asymmetry.[30]

Indeed, it is arguable that the main reason for much of the intellectual confusion surrounding war at the turn of the century stems from the lack of a conceptual synthesis between the requirements of traditional conventional war and the emerging blend of interstate, transstate, and nonstate modes.[31] It is no accident that the most productive areas of military theory have been those that have attempted to concentrate on the expanding phenomenon of war. The most interesting new approaches have come from those who have endeavored to examine the growing complexity of conflict, its holistic yet multidimensional character, its sociological as well as technological dynamics. Conceptual progress has come from analytical work into war's connection to society as well as to the state; from assessing the convergence of modes of conflict and the growing requirements to control armed violence in an age of instantaneous media imagery; and from developing multipurpose forces that can wage warfare across the spectrum of conflict.

In short, it is the interactive character of war—Clausewitz's famous chameleon "that adapts its characteristics to the given case"—that has proven the most original avenue for analysis.[32] The immediate future of war lies perhaps in two key areas. The first is the realm of multidimensional theories of war and conflict that call for multifunctional forces for intervention missions; the second is the evolving theory of counterwar, or "mastery of violence," which may assist military practitioners and policy makers to understand and deal with armed conflict as a multifaceted phenomenon.

A multidimensional approach to war and conflict

As twenty-first-century war becomes, in the words of the prominent Russian military theorist Makhmut Gareev, "a multivariant," advanced armed forces need to develop multidimensional approaches to conflict.[33] The most interesting American and British military theory reflects a growing recognition that in a new age of multiple threats,

discrete categories of conventional and unconventional conflict are eroding, along with corresponding legal and moral restraints.

Much of the West's preparation to meet an accelerating convergence of military challenges is shaped by three ideas. First, there is a general acceptance that armed forces must be able to adapt to differing modes of war, to become multifunctional. Second, as questions of both national and societal security merge and interpenetrate, reactive operational strategies alone become inadequate as means of deterrence. Security in the new era of liberal globalism also requires a willingness to undertake interventions, as well as, correspondingly, proactive military forces. Third, if global political and technological conditions permit radical groups and rogue states to use ballistic or biological weapons to inflict mass casualties on democratic societies, this new challenge must be met by military preemption in ways not seen since the late nineteenth century. In other words, those who espouse the mass murder of innocent civilians in cities and suburbs must be destroyed wherever and whenever preemption is possible. As President George W. Bush put it recently, it is necessary for the West to act decisively against the new threat emanating from "the perilous crossroads of radicalism and technology."[34] Specifically, the diffusion of advanced technology, from standoff missiles to commercial space systems to weapons of mass destruction, into the hands of smaller armies, paramilitaries, militias, and other armed groups puts a premium on Western expeditionary warfare.

Two leading American military theorists, Huba Wass de Czege and Richard Hart Sinnreich, have recently given an unequivocal view of the merging of conventional and unconventional conflict:

> Clear distinctions between conventional and unconventional conflicts are fading, and any future major conflict is almost certain to see a routine commingling of such operations. Similarly, once useful demarcations between front and rear or between theater and strategic operations will continue to evaporate as the instrumentalities of war become more interdependent and, as is increasingly true of communications and space systems, less easily separable from their civilian and commercial counterparts.[35]

As a result, the future requirement will be for joint forces designed for multidimensional, expeditionary-style operations—what the U.S. Army now refers to as "operational maneuver from strategic distance." Such operations are vital to control theaters where "high-low" threats and varied forms of conflict might be expected. Consequently, the main trends in contemporary Western military theory are toward operations with multinational and joint task forces with simplified headquarters structures—not simply corps and division, but increasingly force and formation. Smaller combat formations, such as the combined-arms brigades to serve modular building blocks for forces in the field, are needed.[36] Force structures will become more modular and capable of rapid task force organization from "golf bags" of varied military capabilities.[37]

In expeditionary warfare, the main need is to reconcile operational versatility with organizational stability. Western forces must be capable of undertaking joint, multidimensional missions ranging from shaping the environment to air-ground operational maneuver, to all-out conventional warfare. The demands of operational versatility are likely to place a premium on organizational change.

Multifaceted conflict: counterwar theory and mastery of violence

Recent trends in European-American military theory toward multidimensional operations have also been applied to what some European military thinkers now call "counterwar theory," or the "mastery of violence" as an operational military strategy.[38] In France, the development of counterwar theory reflects the perception that war in the twenty-first century has become "a mixture of phenomena." Some French military thinkers believe that in contemporary armed conflict it is largely impossible to treat war as merely a clash between rival forces; that the conventional cannot be separated from the unconventional; and that traditional lines of authority between military control and political responsibility are becoming blurred.

A military force may now be required to conduct intervention operations in conditions that correspond to neither classical warfare nor traditional peace-support operations. Extremely complex political conditions may arise in which law and order are lacking but the law of armed conflict must nonetheless, and at all costs, be upheld; in such a case a counterwar strategy, the disciplined control of violence, may have to be imposed. As French military analysts Brigadier General Loup Francart and Jean-Jacques Patry observe, "Military operations are now completely integrated with political, diplomatic, economic and cultural activities. Strategy is no longer simply a matter of defense. The problem is now, more than ever, *to conceive military operations in a political framework.*"[39]

General Wesley K. Clark, the American commander who prosecuted Nato's 1999 war against Serbia over Kosovo, has argued that politics in modern war now pervades all of the three levels of war—tactics, operations, and strategy. In the past, politics was mainly a factor at the strategic level, where statecraft guided the military instrument. However, in the early twenty-first century, politics also now impinges on the operational and tactical levels of war, Clark believes, to the extent that it may be necessary to speak of a "political level of war." If General Clark is right, the implications for future civil-military relations are profound.[40]

In an age of increased military-political integration and twenty-four-hour electronic media, the goal of force may be not annihilation or attrition but calibrated "elimination of the enemy's resistance" by the careful and proportional use of counterviolence. The use of armed force in a surgical manner—the rapier rather than the broadsword—would require that military thinking and action be politically sophisticated, legally disciplined, and ethically correct. These needs were among the main lessons of the Kosovo conflict.[41] As French military theorists have argued, the aim must be to ensure that the application of force in intervention operations—especially in an age of instant images—can be modulated and shaped by professional militaries to accomodate rapidly shifting politics and flexible operational and strategic objectives.

Warfare in 2015: a tentative analysis

Given the growing complexity of the military art and of the use of force in statecraft, what are the characteristics of warfare most likely to be over the next decade? Four basic sets can be tentatively offered. First, war is likely to remain a chameleon, presenting itself variously in interstate, transstate, and nonstate modes—or as a combination of these.

However, a word of caution is necessary: it would be a serious mistake to dismiss the possibility of interstate conventional war. If in some areas of the world, such as Western Europe, it is highly improbable, in much of Asia and the Middle East it remains a distinct possibility.[42] Nonetheless, in general terms, the merging of modes of armed conflict does suggest an era of warfare in which national, transstate, and substate forces may coalesce or find themselves in mismatched confrontations. Moreover, the conventional and the unconventional, the symmetric and the asymmetric, may occur almost simultaneously, overlapping in time and space.

Second, advanced warfare will be largely joint-service in character. The revolution in information technology, especially as applied to command and control, long-range precision strike, and stealth, has so compressed time and space in military operations as to create an unprecedented nonlinear battle space characterized by breadth, depth, and height. During the 1990s, the concept of "battle space" replaced the linear battlefield that had defined armed conflict in the Western tradition from Alexander the Great to the Second World War. In essence, the concept of battle space has permitted a shift away from the organization of linear mass toward a simultaneous and "full-dimensional" concentration of *effects*.[43] This is especially significant with regard to the cumulative impact of missile firepower from air, ground, and sea.[44]

Third, most Western military experts believe that future operations will favor simultaneous attack by joint air-ground forces that are "situationally aware"—that have substantially complete and current views of the battlespace via computer and satellite. Advanced forces are also likely to be networked from "sensor to shooter"—that is, surveillance capabilities will be electronically connected to strike forces, and all of them to each other.[45] There will probably be fewer troops deployed on the ground, but the individual soldier—the "strategic corporal"—will have a greater potential impact on events. Growing weapons lethality and increased ability of soldiers to direct long-range precision "fires"—as seen in Afghanistan, where ground forces acted as highly effective sensors for air strikes—are likely to become features of warfare over the next decade.[46]

Fourth, the dominance of surveillance and strike means that joint operations by technologically advanced forces, capable of deep precision attack and quick maneuver, are likely to resemble large-scale ambushes. If an enemy can be remotely located, traditional movement to contact preceded by forward troops probing for the enemy will be replaced by well-prepared, deliberate, "deep" attacks using tactics that exploit rapid positioning for maximum effect. However, precision munitions are likely to be of limited use in close operations, in which infantry must be employed to finish off adversaries.[47]

In the close battle, armored forces and artillery are likely to remain extremely useful in applying suppressive fire in support of troops in action. In the recent campaign in Afghanistan, American forces put their faith in air cover at the expense of both artillery and tanks. It was soon discovered that while precision munitions delivered from high altitude are effective against known point targets, they are much less useful in area attack, as is necessary against forces that are scattered, not precisely located. The majority of American casualties (twenty-eight out of thirty-six) in Operation ENDURING FREEDOM came from enemy mortar fire that could have been suppressed by armor or artillery. The lesson learned from fierce combat in the complex terrain of Afghanistan's

Shah-i-Kot region is that for area suppression, field guns and tanks remain essential in twenty-first-century warfare.[48]

The likely shape of war in the early twenty-first century essentially reflects the consequences of a bifurcated global system between an older state-centric world, on one hand, and new transstate and substate strata on the other. The West has entered a period in which classical interstate war has been supplemented by borderless threats from nonstate actors operating with the power of modern computers, ease of international travel, and, possibly, weapons of mass destruction, with which they can deal lethal blows to any society.

These trends, particularly the unholy alliance between new nonstate actors and advanced technology, collectively point to an urgent need for new strategic thinking. The shift toward connectedness and nonlinearity at the relative expense of territoriality and linearity has become perhaps the central reality of strategy in the opening years of the twenty-first century. Some international observers believe the strategic shift from territoriality to connectedness will be revolutionary in its consequences:

> We are at a moment in world affairs when the essential ideas that govern statecraft must change. For five centuries it has taken the resources of a state to destroy another state; only states could muster the huge revenues, conscript the vast armies, and equip the divisions required to threaten the survival of other states. . . . This is no longer true, owing to advances in international telecommunications, rapid computation, and weapons of mass destruction. The change in statecraft that will accompany these developments will be as profound as any that the State has thus far undergone.[49]

The great danger to Western countries is no longer the threat of military invasion of the nation-state but an assault on the very foundations of our networked society. Western societies are now most vulnerable not from external invasion but from internal disruption of the government, financial, and economic institutions that make up critical infrastructures.[50]

It was this great weakness that al-Qa'ida exploited with such devastating results on 11 September 2001. Increasingly, national security now depends on the protection of a specific set of social institutions and the information links between them. However, our reliance on critical infrastructures vastly exceeds our ability to protect them; it is therefore impossible to protect an entire society solely by "homeland defense."

To defend Western societies, the nation-state model of war based upon threat analysis and against defined enemies will have to be supplemented by new modes of strategic thought that concentrate on alleviating the vulnerabilities of modern states to new nonstate threats. As the French military analyst Phillippe Delmas has warned, "Today's world is without precedent. It is as different from the Cold War as it is from the Middle Ages so the past offers no basis for comparison. . . . Tomorrow's wars will not result from the ambitions of States; rather from their weaknesses."[51]

To meet the challenges of tomorrow's wars, Western countries will need highly mobile, well equipped, and versatile forces capable of multidimensional coalition missions and "mastery of violence" across a complex spectrum of conflict. They will need new national

security apparatus for threat and vulnerability analysis and consequence management in the event of traumatic societal attack. They will need enhanced international intelligence and diplomatic cooperation to ensure that military force is employed with maximum efficiency. They will need new norms of international law that allow joint armed forces to be used, when the enemy can be located, in far-flung preemption operations.[52]

The reality of Western societal vulnerability in conditions of liberal globalism represents a strategic transformation that obliges defense experts and politicians to think rigorously about the kinds of war that might lie ahead. We are confronted with a challenge of finding new ways of using force in merged modes of conflict in an international system that must confront simultaneously both integration and fragmentation.

The problems facing policy makers, strategists, and military professionals in the early twenty-first century, then, have changed dramatically and decisively from those of the twentieth. Military power and capability have expanded into a network of transnational interconnections. As a result, preparing for armed conflict is no longer only a matter of simply assembling battlefield strength to destroy defined adversaries.

Increasingly, military power is entwined in politics—as an instrument that shapes, polices, and bounds the strategic environment, that punishes, signals, and warns. The task for strategists is now one of disciplining available military power into a broad security strategy—one that embraces also diplomacy, intelligence analysis, and law enforcement—in a calibrated, judicious, and precise manner. In the prophetic words, written over thirty-five years ago, of the British strategist Alastair Buchan, "The real content of strategy is concerned not merely with war and battles but with the application and maintenance of force so that it contributes most effectively to the advancement of political objectives."[53] At the dawn of a new century, of a new and uncertain era in armed conflict in a globalized yet deeply fragmented world, these words aptly describe the many dangerous challenges that lie ahead.

Notes

1 For a detailed analysis see Manuel Castells, *The Information Age: Economy, Society and Culture*, vol. I. *The Rise of the Network Society* (Oxford, U.K.: Blackwell, 1996), chaps. 5–7, and Philip Bobbitt, *The Shield of Achilles: War, Peace and the Course of History* (New York: Knopf, 2002), chaps. 10–12, 24–26.

2 President Bill Clinton, "Remarks by the President to American Society of Newspaper Editors," San Francisco, California, 15 April 1999, *Los Angeles Times*, 16 August 1999.

3 Jean-Marie Guèhenno, "The Impact of Globalisation on Strategy," *Survival* 40, no. 4 (Winter 1998–99), pp. 5–19; David Held and Anthony McGrew, "Globalisation and the Prospects for World Order," in *The Eighty Years Crisis: International Relations 1919–99*, ed. Tim Dunne, Michael Cox, and Ken Booth (Cambridge, U.K.: Cambridge Univ. Press, 1999), pp. 219–43.

4 Francis Fukuyama, "The End of History," *National Interest* (Spring 1989) and *The End of History and the Last Man* (New York: Free Press, 1992).

5 See John M. Collins, *Military Geography for Professionals and the Public* (Washington, D.C.: National Defense Univ. Press, 1998) and the essays in Colin S. Gray and Geoffrey Sloan, eds, Geopolitics, *Geography and Strategy* (London: Frank Cass, 1999).

6 Bobbitt, p. 813.

7 Qiao Liang and Wang Xiangsui, *Unrestricted Warfare* (Beijing: People's Liberation Army Literature and Arts Publishing House, 1999), p. 199.

8 For a useful discussion see Robert L. Pfaltzgraff, Jr., and Richard H. Shultz, Jr., "Future Actors in a Changing Security Environment," in *War in the Information Age: New Challenges for U.S. Security Policy*, ed. Pfaltzgraff and Schultz (Washington, D.C.: Brassey's, 1997), chap. 1.

9 This typology is drawn from Robert Cooper's excellent essay on the fragmentation of the international system and the implications for global security. See Robert Cooper, *The Post-Modern State and the World Order* (London: Demos, 1996), esp. pp. 38–47.

10 For views on the future of armed conflict see Makhmut Gareev, *If War Comes Tomorrow? The Contours of Future Armed Conflict* (London: Frank Cass, 1998); Mary Kaldor, *New & Old Wars: Organised Violence in a Global Era* (Cambridge, U.K.: Polity Press, 1999); Gwyn Prins and Hylke Tromp, eds, *The Future of War* (The Hague: Kluwer Law International, 2000); Mark Duffield, *Global Governance and the New Wars: The Merging of Development and Security* (London: Zed Books, 2001): Robert E. Harkavy and Stephanie G. Neuman, *Warfare and the Third World* (New York: Palgrave, 2001); Wesley K. Clark [Gen., USA, Ret.], *Waging Modern War: Bosnia, Kosovo and the Future of Combat* (New York: PublicAffairs, 2001); Andrew J. Bacevich and Eliot A. Cohen, eds, *War over Kosovo: Politics and Strategy in a Global Age* (New York: Columbia Univ. Press, 2001); Christopher Coker, *Waging War without Warriors? The Changing Culture of Military Conflict* (Boulder, Colo.: Lynne Rienner, 2002); William R. Schilling, ed., *Nontraditional Warfare: Twenty-first Century Threats and Responses* (Washington, D.C.: Brassey's, 2002); and Colin S. Gray, *Strategy for Chaos: Revolutions in Military Affairs and the Evidence of History* (London: Frank Cass, 2002).

11 David Halberstam, *War in a Time of Peace: Bush, Clinton and the Generals* (London: Bloomsbury, 2001), esp. chaps. 39–43. The Kosovo conflict is well analyzed in Bacevich and Cohen, eds., *War over Kosovo.*

12 See Lloyd J. Matthews [Col., USA], ed., *Challenging the United States Symmetrically and Asymmetrically: Can America Be Defeated?* (Carlisle Barracks, Penna.: U.S. Army War College, Strategic Studies Institute, July 1998), and Steven Metz and Douglas V. Johnson II, *Asymmetry and U.S. Military Strategy: Definition, Background, and Strategic Concepts* (Carlisle Barracks, Penna.: U.S. Army War College, Strategic Studies Institute, January 2001).

13 For a discussion see Coker, chap. 7.

14 Pierre Hassner, "Beyond War and Totalitarianism: The New Dynamics of Violence," in Prins and Tromp, eds., p. 205.

15 See Bernard Lewis, *What Went Wrong? The Clash between Islam and Modernity in the Middle East* (London: Weidenfeld and Nicolson, 2002).

16 See Avi Kober, "Low-Intensity Conflicts: Why the Gap between Theory and Practise?" *Defense & Security Analysis* 18, no. 1 (March 2002), pp. 15–38, and Harkavy and Neuman, esp. chap. 5. See also Max G. Manwaring, *Internal Wars: Rethinking Problems and Responses* (Carlisle Barracks, Penna.: U.S. Army War College, Strategic Studies Institute, September 2001), pp. 25–34.

17 John Mueller, *Retreat from Doomsday: The Obsolescence of Major War* (New York: Basic Books, 1989).

18 Martin van Creveld, *The Transformation of War* (New York: Free Press, 1991).

19 Alvin and Heidi Toffler, *War and Anti-War: Survival at the Dawn of the Twenty-First Century*. (Boston: Little, Brown, 1993).

20 Robert D. Kaplan, "The Coming Anarchy," *Atlantic Journal*, February 1994, and *The Ends of the Earth: A Journey at the Dawn of the Twenty-First Century* (New York: Random House, 1996); Philip Cerny, "Neomedievalism, Civil War and the New Security Dilemma: Globalisation as Durable Disorder," *Civil Wars* 1, no. 1 (Spring 1998), pp. 36–64; Ralph Peters, *Fighting for the Future: Will America Triumph?* (Mechanicsburg, Penna.: Stackpole Books, 1999).

21 Samuel P. Huntington, *The Clash of Civilizations and the Remaking of World Order* (New York: Simon and Schuster, 1996).

22 Kaldor, esp. chaps. 4–6.

23 See for example, Walter Laqueur, *The New Terrorism: Fanaticism and the Arms of Mass Destruction* (Oxford, U.K.: Oxford Univ. Press), 1999; Kenneth F. McKenzie, Jr., *The Revenge of the Melians: Asymmetric Threats and the New QDR*, McNair Paper 62 (Washington, D.C.: Institute for National Strategic Studies, National Defense Univ., 2000); and the essays in William R. Schilling, ed., *Nontraditional Warfare.*

24 U.S. Commission on National Security/Twenty-First Century, *New World Coming: American Security in the Twenty-First Century*, *Supporting Research & Analysis, Phase 1 Report* (Washington, D.C.: U.S. Commission on National Security/Twenty-First Century, 15 September 1999), p. 57.

25 Donald H. Rumsfeld, "Transforming the Military," *Foreign Affairs* 81, no. 3 (May–June 2002), p. 23.

26 U.S. Commission on National Security/Twenty-First Century. *Seeking a National Strategy: A Concert for Preserving Security and Promoting Freedom*, *Phase II Report* (Washington, D.C: U.S. Commission on National Security/Twenty-First Century, 15 April 2000), p. 14.

27 Robert L. Pfaltzgraff Jr. and Stephen E. Wright, "The Spectrum of Conflict: Symmetrical or Asymmetrical Challenge?" in *The Role of Naval Forces in Twenty-First Century Operations*, ed. Richard H. Shultz and Robert L. Pfaltzgraff, Jr. (Washington, D.C.: Brassey's, 2000), pp. 9–28.

28 Michael Rose, "The Art of Military Intervention," in Prins and Tromp, eds., pp. 241–50; Christopher Bellamy, *Spiral through Time: Beyond "Conflict Intensity*," Occasional Paper 35 (Camberly, U.K.: Strategic and Combat Studies Institute, August 1998), pp. 15–38.

29 Ibid.

30 See Huba Wass de Czege and Richard Hart Sinnreich, *Conceptual Foundations of a Transformed U.S. Army*. Institute for Land Warfare Paper 40 (Washington, D.C.: Association of the United States Army, March 2002); and Bobbitt, chaps. 26–27.

31 For background see Eric Hobsbawm's stimulating essay "War and Peace in the Twentieth Century," *London Review of Books*, 21 February 2002, pp. 16–18.

32 Carl von Clausewitz, *On War*, ed. and trans. Michael Howard and Peter Paret (Princeton, N.J.: Princeton Univ. Press, 1976), p. 89.

33 Gareev, p. 94.

34 George W. Bush, "President Bush Delivers Graduation Speech at West Point," 1 June 2002, White House, www.whitehouse.gov/news/releases/2002/0620020601–3.html.

35 De Czege and Sinnreich, p. 6.

36 See Brian Bond and Mungo Melvin, eds., *The Nature of Future Conflict: Implications for Force Development*, Occasional Paper 36 (Camberly, U.K.: Strategic and Combat Studies Institute, September 1998), and Brigadier C. S. Grant, "The 2015 Battlefield," *British Army Review*, no. 128 (Winter 2001–2002), pp. 5–13.

37 Huba Wass de Czege and Zbigniew M. Majchrzak, "Enabling Operational Maneuver from Strategic Distances," *Military Review* 82, no. 3 (May–June 2002), pp. 16–20. See also Huba Wass de Czege and Antulio J. Echevarria II, "Insights for a Power-Projection Army," *Military Review* 80, no. 3 (May–June 2000), pp. 3–11.

38 Loup Francart [Brig. Gen., French Army] and Jean-Jacques Patry, "Mastering Violence: An Option for Operational Military Strategy," *Naval War College Review* 53, no. 3 (Summer 2000), pp. 144–84. See also George A. Bloch, "French Military Reform: Lessons for America's Army?" *Parameters: U.S. Army War College Quarterly* 30, no. 2 (Summer 2000), pp. 33–45.

39 Francart and Patry, p. 145 [emphasis added].

40 Clark, pp. 10–11. For a recent discussion of civil-military relations see Eliot A. Cohen, *Supreme Command: Soldiers, Statesmen, and Leadership in Wartime* (New York: Free Press, 2002).

41 For legal and ethical legacies of the Kosovo campaign, see Frederic L. Borch, "Targeting after Kosovo: Has the Law Changed for Strike Planners?" *Naval War College Review* 56, no. 2 (Spring 2003), pp. 64–81.

42 For a discussion see Paul Bracken, "The Military Crisis of the Nation State: Will Asia Be Different from Europe?" in *Contemporary Crisis of the Nation State?* ed. John Dunn (Oxford, U.K.: Blackwell, 1995), pp. 97–114, and Jeffrey Record, "Thinking about China and War," *Aerospace Power Journal* 15, no. 4 (Winter 2001), pp. 69–80.

43 Paul E. Funk [Lt. Gen., USA], "Battle Space: A Commander's Tool on the Future Battlefield," *Military Review* 73, no. 12 (December 1993), pp. 36–47; Frederick M. Franks [Gen., USA], "Full Dimensional Operations: A Doctrine for an Era of Change," *Military Review* 73, no. 12 (December 1993), pp. 5–10; and U.S. Army Dept., *Operations*, Field Manual 3–0 (Washington, D.C.: Department of the Army, June 2001), pp. 4-20 to 4-21.

44 Michael Russell Rip and James M. Hasik, *The Precision Revolution: GPS and the Future of Aerial Warfare* (Annapolis, Md.: Naval Institute Press, 2002), chaps. 11–13; and Ted Hooton, "Naval Firepower Comes of Age," *Jane's Defence Weekly*, 13 November 2002, pp. 17–28.

45 See the broad and growing literature on network-centric warfare, including Christopher D. Kolenda, "Transforming How We Fight: A Conceptual Approach," *Naval War College Review* 56, no. 2 (Spring 2003), which cites the basic sources, pp. 100–21.

46 Antulio J. Echevarria II, *Rapid Decisive Operations: An Assumptions-Based Critique* (Carlisle Barracks, Penna.: U.S. Army War College, Strategic Studies Institute, November 2001), pp. 14–18.

47 Huba Wass de Czege, "Maneuver in the Information Age," in Pfaltzgraff and Shultz, eds., pp. 203–24; Dick Applegate [Col., USA], "Towards the Future Army," in Bond and Melvin, eds., pp. 77–91; Grant, pp. 9–10.

48 U.S. Center for Army Lessons Learned, "Emerging Lessons, Insights and Observations: Operation Enduring Freedom" (Fort Leavenworth, Kans.: CALL, 1 August 2002), document in author's possession. A useful summary of this report can be found in Amy Svitak, "U.S. Army, Navy Mull Lessons Learned in Afghanistan War," *Defense News*, 22–28 July 2002.

49 Bobbitt, p. xxi.

50 Ibid., pp. 776–823. A view recently reinforced by Stephen E. Flynn *et al.*, *America Still Unprepared— America Still in Danger: Report of an Independent Task Force Sponsored by the Council on Foreign Relations* (New York: Council on Foreign Relations, 2002).

51 Phillippe Delmas, *The Rosy Future of War* (New York: Free Press, 1995), p. 213.

52 For discussions see Adam Paul Stoffa, "Special Forces, Counterterrorism and the Law of Armed Conflict," *Studies in Conflict and Terrorism* 18, no. 1 (June 1995), pp. 47–66; Eric S. Krauss and Mike O. Lacey, "Utilitarian vs. Humanitarian: The Battle over the Law of War," *Parameters: U.S. Army War College Quarterly* 32, no. 2 (Summer 2002), pp. 73–84; and Bobbitt, chaps. 24–27.

53 Alastair Buchan, *War in Modern Society: An Introduction* (London: C. A. Watts, 1966), pp. 81–82.

23 Cyber war will not take place

Thomas Rid

In the mid-1930s, inspired by the lead-up to World War I, the French dramatist Jean Giraudoux wrote a famous play, *La guerre de Troie n'aura pas lieu,* the Trojan War will not take place. The English playwright Christopher Fry translated the two acts in 1955 as *Tiger at the Gates*.[1] The plot is set inside the gates of the city of Troy. Hector, a disillusioned Trojan commander, tries to avoid in vain what the seer Cassandra has predicted to be inevitable: war with the Greeks. Giraudoux was a veteran of 1914 and later worked in the French foreign office. His tragedy is an eloquent critique of Europe's leaders, diplomats, and intellectuals who were, again, about to unleash the dogs of war. The play premiered in November 1935 in the Théâtre de l'Athénée in Paris, almost exactly four years before the dramatist's fears would come true.

Judging from present pronouncements about cyber war, the world seems to be facing another 1935-moment. 'Cyberwar is Coming!' declared the RAND Corporation's John Arquilla and David Ronfeldt in 1993.[2] It took a while for the establishment to catch on. 'Cyberspace is a domain in which the Air Force flies and fights', announced Michael Wynne, a US Air Force Secretary, in 2006. Four years later the Pentagon leadership joined in. 'Although cyberspace is a man-made domain', wrote William Lynn, America's Deputy Secretary of Defense, in a 2010 *Foreign Affairs* article, it has become 'just as critical to military operations as land, sea, air, and space'.[3] In the same year, Richard Clarke, the White House's former cyber tsar, invoked calamities of a magnitude that make 9/11 pale in comparison and urged taking a number of measures 'simultaneously and now to avert a cyber war disaster'.[4] In February 2011, then-Central Intelligence Agency Director Leon Panetta warned the House Permanent Select Committee on Intelligence: 'The next Pearl Harbor could very well be a cyber attack.'[5] That year a highly sophisticated computer worm may have significantly damaged the Iranian nuclear enrichment program at Natanz. One much-noted investigative article in *Vanity Fair* concluded that the event foreshadowed the destructive new face of twenty-first century warfare, 'Stuxnet is the Hiroshima of cyber-war.'[6]

But is it? Are the Cassandras of cyber warfare on the right side of history? Is cyber war really coming? This article argues that cyber war will not take place. That statement does not come with a Giraudouxian twist and irony. It is meant literally – as a statement about the past, the present, and the likely future: Cyber war has never happened in the past. Cyber war does not take place in the present. And it is highly unlikely that cyber war will occur in the future. Instead, all past and present political cyber attacks are

merely sophisticated versions of three activities that are as old as warfare itself: subversion, espionage, and sabotage. That is improbable to change in the years ahead.

The argument is presented in three steps. The first part outlines what cyber war is. Any attempt to answer the question of cyber war has to start conceptually. An offensive act has to meet certain criteria in order to qualify as an act of war. Any act of war has to have the potential to be lethal; it has to be instrumental; and it has to be political. The second part outlines what cyber war is not, case-by-case. Not one single past cyber offense, neither a minor nor a major one, constitutes an act of war on its own. This finding raises an immediate question, what these events actually are, if they are not war. The final part therefore constructively offers a more nuanced terminology to come to terms with cyber attacks. Political offenses – events between apolitical crime on the one end of the spectrum and real war on the other end – may have the aim of subverting, spying, or sabotaging. All cyber offenses of the past and current years fall into these three classes of activities. The article concludes by pointing out trends, risks, and recommendations.

What is cyber war?

Clausewitz still offers the most concise concept of war. It has three main elements. Any aggressive or defensive action that aspires to be a stand-alone act of war, or may be interpreted as such, has to meet all three criteria. Past cyber attacks do not.

The first element is war's violent character. 'War is an act of force to compel the enemy to do our will', wrote Carl von Clausewitz on the first page of *On War*.[7] All war, pretty simply, is violent. If an act is not potentially violent, it is not an act of war. Then the term is diluted and degenerates to a mere metaphor, as in the 'war' on obesity or the 'war' on cancer. A real act of war is always potentially or actually lethal, at least for some participants on at least one side. Unless physical violence is stressed, war is a hodge-podge notion, to paraphrase Jack Gibbs.[8] In Clausewitz's thinking, violence is the pivotal point of all war. Both enemies – he usually considered two sides – would attempt to escalate violence to the extreme, unless tamed by friction, imponderables, and politics.[9]

The second element highlighted by Clausewitz is war's instrumental character. An act of war is always instrumental. To be instrumental, there has to be a means and an end. Physical violence or the threat of force is the *means*. The *end* is to force the enemy to accept the offender's will. Such a definition is 'theoretically necessary', Clausewitz argued.[10] To achieve the end of war, one opponent has to be rendered defenseless. Or, to be more precise: the opponent has to be brought into a position, against his will, where any change of that position brought about by the continued use of arms would bring only more disadvantages for him, at least in that opponent's view. Complete defenselessness is only the most extreme of those positions. Both opponents use violence in this instrumental way, shaping each other's behavior, giving each other the law of action, in the words of the Prussian philosopher of war.[11] The instrumental use of means takes place on tactical, operational, strategic, and political levels. The higher the order of the desired goal, the more difficult it is to achieve. As Clausewitz put it, in the slightly stilted language of his time: 'The purpose is a political intention, the means is war; never can the means be understood without the purpose.'[12] This leads to another central feature of war.

The third element that Clausewitz identified is war's political nature. An act of war is always political. The objective of battle, to 'throw' the enemy and to make him defenseless, may temporarily blind commanders and even strategists to the larger purpose of war. War is never an isolated act. War is never only one decision. In the real world, war's larger purpose is always a political purpose. It transcends the use of force. This insight was captured by Clausewitz's most famous phrase, 'War is a mere continuation of politics by other means.'[13] To be political, a political entity or a representative of a political entity, whatever its constitutional form, has to have an intention, a will. That intention has to be articulated. And one side's will has to be transmitted to the adversary at some point during the confrontation (it does not have to be publicly communicated). Any violent act and its larger political intention also has to be attributed to one side at some point during the confrontation. History does not know acts of war without eventual attribution.

One modification is significant before applying these criteria to cyber offenses. A pivotal element of any warlike action remains the 'act of force'. That act of force is usually rather compact and dense, even when its components are analyzed in detail. In most armed confrontations, be they conventional or unconventional, the use of force is more or less straightforward: it may be an F-16 striking targets from the air, artillery barrages, a drone-strike, improvised explosive devices placed by the side of a road, even a suicide bomber in a public square. In all these cases, a combatant's or insurgent's triggering action – say pushing a button or pulling trigger – will rather immediately and directly result in casualties, even if a timer or a remote control device is used, such as a drone or a cruise missile, and even if a programmed weapon system is able to semi-autonomously decide which target to engage or not.[14] An act of cyber war would be an entirely different game.

In an act of cyber war, the actual use of force is likely to be a far more complex and mediated sequence of causes and consequences that ultimately result in violence and casualties.[15] One often-invoked scenario is a Chinese cyber attack on the United States homeland in case of a political crisis in, say, the Taiwan Strait. The Chinese could blanket a major city with blackout by activating so-called logic-bombs that were pre-installed in America's electricity grid. Financial information on a massive scale could be lost. Derailments could crash trains. Air traffic systems and their backups could collapse, leaving hundreds of planes aloft without communication. Industrial control systems of highly sensitive plants, such as nuclear power stations, could be damaged, potentially leading to loss of cooling, meltdown, and contamination.[16] As a result, people could suffer serious injuries or be killed. Military units could be rendered defenseless. In such a scenario, the causal chain that links somebody pushing a button to somebody else being hurt is mediated, delayed, and permeated by chance and friction. Yet such mediated destruction caused by a cyber offense *could*, without doubt, be an act of war, even if the means were not violent, only the consequences.[17] Moreover, in highly networked societies, non-violent cyber attacks *could* cause economic consequences without violent effects that then *could* exceed the harm of an otherwise smaller physical attack.[18] For one thing, such scenarios have caused widespread confusion, 'Rarely has something been so important and so talked about with less clarity and less apparent understanding than this phenomenon', commented Michael Hayden, formerly director of the CIA as well as the

National Security Agency (NSA).[19] And second, to date all such scenarios have another major shortfall: they remain fiction, not to say science fiction.

Not cyber war

If the use of force in war is violent, instrumental, and political, then there is no cyber offense that meets all three criteria. But more than that, there are very few cyber attacks in history that meet only *one* of these criteria. It is useful to consider the most-quoted offenses case-by-case, and criterion-by-criterion.

The most violent 'cyber' attack to date is likely to be a Siberian pipeline explosion – if it actually happened. In 1982, an American covert operation allegedly used rigged software to cause a massive pipeline explosion in Russia's Urengoy–Surgut–Chelyabinsk pipeline, which connected the Urengoy gas fields in Siberia across Kazakhstan, then Russia, to European markets. The gigantic pipeline project required sophisticated control systems, for which the Soviet operators had to purchase computers on the open markets. The Russian pipeline authorities tried to acquire the necessary Supervisory Control and Data Acquisition software, known as SCADA, from the United States and were turned down. The Russians then attempted to get the software from a Canadian firm. The CIA is said to have succeeded in inserting malicious code into the control system that ended up being installed in Siberia. The code that controlled pumps, turbines, and valves was programmed to operate normally for a time and then 'to reset pump speeds and valve settings to produce pressures far beyond those acceptable to pipeline joints and welds', recounted Thomas Reed, an official in the National Security Council at the time.[20] In June 1982, the rigged valves probably resulted in a 'monumental' explosion and fire that could be seen from space. The US Air Force allegedly rated the explosion at three kilotons, equivalent to a small nuclear device.[21] But when Reed's book came out in 2004, Vasily Pchelintsev, a former KGB head of the Tyumen region where the alleged explosion was supposed to have taken place, denied the story. He surmised that Reed could have referred to an explosion that happened not in June but on a warm April day that year, 50 kilometers from the city of Tobolsk, caused by shifting pipes in the tundra's melting ground. No one was hurt in that explosion.[22]

There are no media reports from 1982 that would confirm Reed's alleged explosion, although regular accidents and pipeline explosions in the USSR were reported in the early 1980s. Even after the CIA declassified the so-called Farewell Dossier, which described the effort to provide the Soviet Union with defective technology, the agency did not confirm that such an explosion took place. If it happened, it is unclear if the explosion resulted in casualties. The available evidence on the event is so thin and questionable that it cannot be counted as a proven case of a successful logic bomb. This means that there is no known cyber attack that unequivocally meets Clausewitz's first criterion: violence. No cyber offense has ever caused the loss of human life. No cyber offense has ever injured a person. No cyber attack has ever damaged a building.[23]

Another oft-quoted example of cyber war is an attack on Estonia that began in late April 2007. Estonia at the time was one of the world's most connected nations; two thirds of all Estonians used the Internet and 95 percent of banking transactions were done electronically.[24] The small and well-wired Baltic country was relatively vulnerable

to cyber attacks. The story started about two weeks before 9 May, a highly emotional day in Russia when the victory against Nazi Germany is remembered. With indelicate timing, authorities in Tallinn decided to move the two-meter Bronze Soldier, a Russian World War II memorial of the Unknown Soldier, from the center of the capital to its outskirts. The Russian-speaking populations as well as neighboring Russia were aghast. On 26 and 27 April, Tallinn saw violent street riots, with 1,300 arrests, 100 injuries, and one fatality.

The street riots were accompanied by online riots. The cyber attacks started in the late hours of Friday 27 April. Initially the attackers used rather inept, low-technology methods, such as ping floods and simple denial of service attacks. Then the attacks became slightly more sophisticated. Starting on 30 April, simple botnets were used to increase the volume of distributed denial of service (DDoS) attacks, and the timing of these collective attacks was increasingly coordinated. Other types of nuisances included email and comment spam as well as the defacement of the Estonian Reform Party's website. Estonia experienced what was then the worst-ever DDoS. The attacks came from an extremely large number of hijacked computers, up to 85,000; and the attacks went on for an unusually long time, for three weeks, until 19 May. The attacks reached a peak on 9 May, when Moscow celebrates Victory Day. Fifty-eight Estonian websites were down at once. The online services of Estonia's largest bank, then known as Hansapank, were unavailable for 90 minutes on 9 May and for two hours a day later.[25] The effect of these coordinated online protests on business, government, and society was noticeable, but ultimately it remained minor. The main long-term consequence of the attack was that the Estonian government succeeded in getting the North Atlantic Treaty Organization (NATO) to establish a permanent agency in Tallinn, the Cooperative Cyber Defence Centre of Excellence.

A few things are notable about the attack. It remained unclear who was behind the attacks. Estonia's defense minister as well as the country's top diplomat pointed their fingers at the Kremlin. But they were unable to muster evidence, retracting earlier statements that Estonia had been able to trace the Internet Provider addresses of some computers involved in the attack back to the Russian government. Neither experts from the Atlantic Alliance nor from the European Commission were able to identify Russian fingerprints in the operations. Russian officials called accusations of involvement 'unfounded'.[26]

Keeping Estonia's attack in perspective is important. Mihkel Tammet, an official in charge of Information Computer Technology (ICT) for the Estonian Ministry of Defense, described the time leading up to the launch of the attacks as a 'gathering of botnets like a gathering of armies'.[27] Andrus Ansip, then Estonia's prime minister, asked, 'What's the difference between a blockade of harbors or airports of sovereign states and the blockade of government institutions and newspaper websites?'[28] It was of course a rhetorical question. Yet the answer is simple: unlike a naval blockade, the mere 'blockade' of websites is not violent, not even potentially; unlike a naval blockade, the DDoS attack was not instrumentally tied to a tactical objective, but an act of undirected protest; and unlike ships blocking the way, the pings remained anonymous, without political backing. Ansip could have asked what the difference was between a large popular demonstration blocking access to buildings and the blocking of websites. The comparison would have

been better, but still flawed for an additional reason: many more actual people have to show up for a good old-fashioned demonstration than for a DDoS attack.

A year later a third major event occurred that would enter the Cassandra's tale of cyber war. The context was a ground war between the Russian Federation and Georgia in August 2008. The short armed confrontation was triggered by a territorial dispute over South Ossetia. On 7 August, the Georgian Army reacted to provocations by attacking South Ossetia's separatist forces. One day later, Russia responded militarily. Yet the computer attack on the Georgian websites started slowly on 29 July, ten days before the military confrontation and with it the main cyber attack started on 8 August. It may have been the first time an independent cyber attack happened in synchronization with a conventional military operation. The cyber attacks on Georgia comprised three types.

Some of the country's prominent websites were defaced, for instance that of Georgia's national bank and the ministry of foreign affairs. The most notorious defacement was a collage of portraits juxtaposing Adolf Hitler and Mikheil Saakashvili, the Georgian president.

The second type of offence were denial-of-service attacks against websites in the Georgian public and private sectors, including government websites, like the parliament, but also news media, Georgia's largest commercial bank, and other minor websites. The attacks, on average, lasted around two hours and 15 minutes, the longest up to six hours.[29]

A third method was an effort to distribute malicious software to deepen the ranks of the attackers and the volume of attacks. Various Russian-language forums helped distribute scripts that enabled the public to take action, even posting the attack script in an archived version, *war.rar*, which prioritized Georgian government websites. In a similar vein, email addresses of Georgian politicians were spammed.

The effects of the attack were again rather small. Despite the warlike rhetoric by the international press, by the Georgian government, and by anonymous hackers, the attacks were not violent. And Georgia, a small country with a population of about 4.5 million, was even less vulnerable to attacks than Estonia; web access was relatively low and few vital services like energy, transportation, or banking were tied to the Internet. The attack had little effect beyond making a number of Georgian government websites temporarily inaccessible. The attack was also only minimally instrumental. The attack's main damage was in limiting the government's ability to communicate internationally and making the small country's voice heard at a critical moment. If the attackers intended this effect, its utility was limited: the foreign ministry took the rare step, with Google's permission, to set up a weblog on Blogger, the company's blogging platform. This helped keep one more channel to journalists open. The National Bank of Georgia ordered all branches to stop offering electronic services for ten days. Most importantly, the attack was not genuinely political in nature. As in the Estonian case, the Georgian government blamed the Kremlin. But Russia again denied official sponsorship of the attacks. NATO's Tallinn-based cyber security center published a report on the Georgia attacks. Although the attacks appeared coordinated and instructed, and although the media were pointing fingers at Russia, 'there is no conclusive proof of who is behind the DDoS attacks', NATO concluded, 'as was the case with Estonia'.[30]

The cyber scuffles that accompanied the street protests in Estonia and the short military ground campaign in Georgia were precedents. Perhaps the novelty of these types of offenses was the main reason for their high public profile and the warlike rhetoric that surrounded them. The same observation might be true for another type of 'cyber war', high-profile spying operations. An early example is 'Moonlight Maze'. That lurid name was given to a highly classified cyber-espionage incident discovered in 1999. The US Air Force coincidentally discovered the intrusion into its network. The Federal Bureau of Investigation (FBI) was alerted. The federal investigators called in the NSA. An investigation uncovered a pattern of intrusion into computers at the National Aeronautics and Space Administration (NASA), at the Energy Department, at universities as well as research laboratories that had started in March 1998. Maps of military installations were copied, hardware designs, and other sensitive information. The incursions went on for almost two years. The Pentagon was able to trace back the attack to what was then called a mainframe computer in Russia. But again: no violence, unclear goals, no political attribution.

Yet the empirical trend is obvious: over the past dozen years, cyber attacks have been steadily on the rise. The frequency of major security breaches against governmental and corporate targets has been going up. The volume of attacks is increasing. So is the participation in attacks, ranging from criminals to activists to the NSA. The range of aggressive behavior online is widening. At the same time the sophistication of some attacks has reached new heights. In this respect Stuxnet has indeed been a game-changing event. Despite these trends the 'war' in 'cyber war' has more in common with the 'war' on obesity than with the World War II – it has more metaphoric than descriptive value. It is high time to go back to classic terminology and understand cyber offences for what they really are.

Aggression, whether it involves computers or not, may be criminal or political in nature. It is useful to group offences along a spectrum, stretching from ordinary crime all the way to conventional war. Then a few distinctive features become visible: crime is mostly apolitical, war is always political; criminals conceal their identity, uniformed soldiers display their identity openly. Political violence (or 'political crime' in criminology and the theory of law) occupies the muddled middle of this spectrum, being neither ordinary crime nor ordinary war. For reasons of simplicity, this analysis will focus on three types of offenses on that middle stretch of the spectrum: subversion, espionage, and sabotage. All three activities may involve states as well as private actors. Cyber offenses tend to be skewed towards the criminal end of the spectrum. So far there is no known act of cyber war, when war is properly defined. That of course does not mean that there are no political cyber offenses. But all known political cyber offenses, criminal or not, are neither common crime nor common war. Their purpose is subverting, spying, or sabotaging.

In all three cases, Clausewitz's three criteria are jumbled. These activities need not be violent to be effective. They need not be instrumental to work, as subversion may often be an expression of collective passion and espionage may be an outcome of opportunity rather than strategy. And finally: aggressors engaging in subversion, espionage or sabotage do act politically; but in sharp contrast to warfare, they are likely to have a permanent or at least temporary interest in avoiding attribution. This is one of the main reasons why political crime, more than acts of war, has thrived in the cyber domain, where non-attribution may

be easier to achieve than waterproof attribution. It goes without saying that subversion, espionage and sabotage – 'cybered' or not – may accompany military operations. Both sides may use it, and indeed have done so since time immemorial. But the advent of digital networks had an uneven effect.

Sabotage

Sabotage, first, is a deliberate attempt to weaken or destroy an economic or military system. All sabotage is predominantly *technical* in nature, but of course may use social enablers. The word allegedly dates from a French railway strike in 1910. Workers removed and damaged the *sabots*, wooden shoes that held the rails in their bed. The means used in sabotage must not always lead to physical destruction and overt violence, but they can. *If violence is used, things are the prime targets, not humans*, even if the ultimate objective may be to change the cost-benefit calculus of decisionmakers. Sabotage tends to be tactical in nature and will only rarely have operational or even strategic effects. The higher the technical development and the dependency of a society and its government and military, the higher is the potential for sabotage, especially cyber-enabled sabotage. Sabotage on its own may not be an act of war because the saboteurs may deliberately avoid open violence, they may avoid political attribution, but they always aim to be instrumental. Both avoiding excessive violence and avoiding identification may serve the ultimate goal of sabotage: impairing a technical system. Two high-profile sabotage operations, both Israeli, are instructive.

   Some examples of successful use of cyber sabotage are publicly known. Such sabotage may happen in conjunction with conventional military force or stand-alone. One of the most spectacular examples for a combined strike is Operation 'Orchard', Israel's bombing raid on a nuclear reactor site at Dayr ez-Zor in northern Syria on 6 September 2007. It appears that the Israeli Air Force prepared for the main attack by taking out a single Syrian radar site at Tall al-Abuad close to the Turkish border. The Israeli attackers combined electronic warfare with precision strikes. The Syrian electrical grid was not affected. Syria's air-defense system, one of the most capable in the world, went blind and failed to detect an entire Israeli squadron of F-15I and F-16I warplanes entering Syrian airspace, raiding the site, and leaving again.[31] Before-and-after satellite pictures of the targeted site on the Euphrates were made public by the US government. They show that the nascent nuclear facility with its suspected reactor building, which was located about 145 kilometers from Iraq, had been reduced to rubble. The cyber work of the operation was probably done by Unit 8200, the largest unit in the Israel Defense Forces (IDF) and Israel's equivalent to the NSA.[32] The technicians may have used a so-called 'kill switch' embedded in the air defense system by a contractor to render it useless.[33] The details of the operation remain highly classified. But one thing can be highlighted already: the cyber element of Operation 'Orchard' probably was critical for the success of the Israeli raid and although the cyber attack did not physically destroy anything on its own right, it should be seen as an integrated part of a larger military operation. Although the cyber attack on its own – without the military component – would not have constituted an act of war, it was nevertheless an enabler for a successful military attack. That was different in another, even more spectacular recent incident.

Stuxnet was by far the most sophisticated known cyber attack to date. It was a highly directed attack against specific targets, most likely Iran's nuclear enrichment program at Natanz.[34] The worm was an act of cyber-enabled stand-alone sabotage not connected to a conventional military operation. Stuxnet was what the security industry calls an Advanced Persistent Threat (APT). Operation 'Myrtus,' as Stuxnet may have been called by its creators, was a multi-year campaign. The program started probably in late 2007 or early 2008.[35] It is likely that the main attack had been executed between June 2009 and June 2010, when Information Technology (IT) security companies first publicly mentioned the worm. Stuxnet recorded a timestamp and other system information. Therefore engineers were able, in months of hard work, to outline the worm's infection history as well as to reverse-engineer the threat and to understand its purpose. The following paragraphs are intended to provide a glimpse into Stuxnet's complexity and sophistication.

The sabotage software was specifically written for Industrial Control Systems. These control systems are box-shaped stacks of hardware without keyboards or screens. A so-called Programmable Logic Controller (PLC) runs the control system. Therefore an industrial plant's operators have to program the controllers by temporarily hooking them up to a laptop, most likely a so-called Field PG, a special industrial notebook sold by Siemens. These Field PGs, unlike the control system and the controller itself, run Microsoft Windows and were most likely not connected to the Internet and not even to an internal network.[36]

The first complication for the attackers was therefore a feasible infection strategy. Stuxnet had to be introduced into the target environment and spread there in order to reach its precise target. That target was protected by a so-called 'air gap', by not being connected to the insecure Internet and even internal networks. Therefore the infection most likely happened through a removable drive, such as a USB stick. The attack vehicle was coded in a way that allowed its handlers to connect to the worm through a command-and-control server. But because the final target was not networked, 'all the functionality required to sabotage a system was embedded directly in the Stuxnet executable', Symantec observed in the updated *W32.Stuxnet Dossier*, an authoritative analysis of the worm's code.[37] The worm's injection mechanism had to be aggressive. The number of collateral and inconsequential infections was initially large: by the end of 2010, the worm had infected approximately 100,000 hosts in dozens of countries, 60 percent of which were in Iran – the machines that ultimately spread the virus on its two final targets were among them.

A second complexity was Stuxnet's 'sabotage strategy', in Symantec's words. The work specifically targeted two models of Siemens logic controllers, 6ES7-315-2 and 6ES7-417, so-called code 315 and code 417. The likely targets were the K-1000–60/3000–3 steam turbine in the Bushehr nuclear power plant for code 417 and the gas centrifuges in Natanz for code 315.[38] If the worm was able to connect to such controllers, it proceeded checking their configurations to identify the target. If Stuxnet did not find the right configuration, it did nothing. But if it found what it was looking for, the worm started a sequence to inject one of three payloads. These payloads were coded to change the output frequencies of specific drivers that run motors. Stuxnet thus was set up to cause industrial processes to malfunction, physically damaging rotors, turbines, and

centrifuges. The attack's goal was damaging the centrifuges slowly, thus tricking the plant's operators. Their rationale probably was that damaging hardware would delay Iran's enrichment program for a significant period of time, as components cannot just be easily bought on open markets.

This method relates to a third complexity, the worm's stealthiness. Before Stuxnet started sabotaging processes, it intercepted input values from sensors, for instance the state of a valve or operating temperatures, recorded these data, and then provided the legitimate controller code with pre-recorded fake input signals, while the actual processes in the hidden background were manipulated. The objective was not just fooling operators in a control room, but circumventing and compromising digital safety systems. Stuxnet also hid the modifications it made to the controller code. And even before launching a payload, Stuxnet operated stealthily: it had mechanisms to evade antivirus software, it is able to hide copies of its files on removable drives, hide its own program blocks when an enumeration is enforced on a controller, and erased itself from machines that do not lead to the target.

The resources and investment that went into Stuxnet could only be mustered by a 'cyber superpower', argued Ralph Langner, a German control system security consultant who first extracted and decompiled the attack code.[39] A possibility is that Israel engineered the threat with American support. It starts with intelligence: each single control system is a unique configuration, so the attackers needed superb information about the specific system's schematics. 'They probably even knew the shoe size of the operators', joked Langner. The designs could have been stolen or even extracted by an earlier version of Stuxnet. Another aspect is the threat's design itself: the code was so specific that it is likely that the attackers had to set up a mirrored environment to refine their attack vehicle, which could have included a mock enrichment facility.[40] Stuxnet also had network infection routines, it was equipped with peer-to-peer update mechanisms that seem to have been capable communicating even with infected equipment without Internet connection, and injected code into industrial control systems while hiding the code from the operator. Programming such a complex agent required time, resources, and an entire team of core developers as well as quality assurance and management.[41] The threat also combined expensive and hard-to-get items: four zero-day exploits, two stolen digital certificates, a Windows rootkit (a software granting hidden privileged access), and even the first-ever Programmable Logic Controller rootkit.[42] For the time being it remains unclear how successful the Stuxnet attack against Iran's nuclear program actually was. But it is clear that the operation has taken computer sabotage to an entirely new level.

Espionage

The second offensive activity that is neither crime nor war is espionage. Espionage is an attempt to penetrate an adversarial system for purposes of extracting sensitive or protected information. It may be either *social* or *technical* in nature. That division of labour is old. It is known as human intelligence and signals intelligence in the trade of secret services. The level of technical sophistication required for espionage may be high, but the requirements are less demanding than for complex sabotage operations. This is because espionage is not directly instrumental; its main purpose is not achieving a goal

but to gather the information that may be used to design more concrete instruments or policies. A highly digitized environment has vastly increased the number of actors in the espionage business. Professionally and expensively trained agents working for governments (or large companies) have new competition from hackers and private individuals, sometimes acting on their own initiative yet potentially providing information for a larger cause. The most widespread use of state-sponsored cyber capabilities is for purposes of espionage. Empirically, the vast majority of all political cyber security incidents have been cases of espionage. As the attackers' identity often remains dubious, it is the victim that chooses the colorful names of these operations.

An early example, 'Moonlight Maze', has already been mentioned. Another example, 'Titan Rain', is the US government codename for a series of attacks on military and governmental computer systems in 2003, an attack that continued persistently for years. Chinese hackers had probably gained access to hundreds of firewalled networks at the Pentagon, the State Department, Homeland Security, as well as defense contractors such as Lockheed Martin. It remains unclear if Chinese security agencies were behind the intrusion or if an intruder merely wanted to mask his true identity by using China-based computers. One Pentagon source estimated that Chinese intruders had downloaded '10 to 20 terabytes of data' from non-classified Department of Defense networks.[43] Classified networks were probably not compromised.[44]

In November 2008, the US military witnessed the most significant breach of its computers to date. An allegedly Russian piece of spyware was inserted through a flash drive into a laptop at a base in the Middle East, 'placed there by a foreign intelligence agency', according to the Pentagon's number two.[45] It then started scanning the Internet for dotmil domain addresses. This way the malware got access to the Pentagon's unclassified network, the Non-classified Internet Protocol Router Network (NIPRNET). The Defense Department's global secure intranet, the Secret Internet Protocol Router Network (SIPRNET), designed to transmit confidential and secret-level information, is protected by a so-called air gap or air wall, meaning that the secure network is physically, electrically, and electromagnetically separated from insecure networks. So once the piece of malware was on a hard drive in the NIPRNET, it began copying itself onto removable thumb drives. The hope was that an unknowing user would carry it over the air gap into SIPRNET, a problem known as the 'sneakernet' effect among the Pentagon's security experts.[46] That indeed happened and a virtual beachhead was established. But it remains unclear if the software was able to extricate information from the classified network, let alone what and how much.

In March 2009, Ron Deibert and his team at the University of Toronto publicized their discovery of what they called GhostNet, a sophisticated international spying operation, probably of Chinese origin. The network had infected 1,295 host computers of ministries of foreign affairs, embassies, international organizations, news media, and non-governmental organizations in 103 countries. The malware was able to take full control of infected computers, including searching and downloading documents, logging keystrokes, and even covertly activating personal computer cameras and microphones and capturing the recorded information.[47]

Only rarely do governments disclose information on successful cyber attacks on their systems. If they do, as some high-profile cases in the Pentagon illustrate, the amount of

information released is not very deep. And not always are IT security firms or independent researchers able to analyze and illuminate the threat, like in the case of Stuxnet or Ghostnet. Therefore numerous examples exist where public information is scarce. In December 2007, the head of British internal intelligence, MI5, informed the executives of 300 companies that they were under attack by Chinese organizations, top banks among them.[48] Between 2007 and 2009, terabytes of data on the development of the F-35 were stolen, including specifics of its electronic warfare systems, the greatest advance of America's new fourth-generation fighter.[49] In January 2011, the British Foreign Office's IT system had come under attack from a 'hostile state intelligence agency'.[50] Many more past and recent examples could be added to this list, and it will certainly grow in the future. Despite heavy investments in defenses, cyber espionage is a booming activity, both against private and public entities.

Subversion

The remaining third offensive activity is subversion. Subversion is the deliberate attempt to undermine the authority, the integrity, and the constitution of an established authority or order. The ultimate goal of subversion may be overthrowing a society's established government. But subversive activity may also have more limited causes, such as undermining an organization's or even a person's authority. The modus operandi of subversive activity is eroding *social* bonds, beliefs, and trust in the state and other collective entities. The means used in subversion may not always include overt violence. One common tool of subversion is propaganda, for instance pamphlets, literature, and film. The vehicle of subversion is always influencing the loyalties of individuals and uncommitted bystanders. *Human minds are the targets, not machines.* This also applies when force comes into play. It is important to note that subversion is a broader concept than insurgency: subversion, in contrast to insurgency, does not require violence and it does not require the overthrow of an established order to be successful.

To understand subversion's potentially limited instrumentality, something rather un-technical has to be considered: emotional causes. The present uses of the concept of 'cyber war' tend to be inept and imprecise. But other classic concepts of the study of war retain their relevance and pertinence for the study of cyber offenses. Clausewitz, and many other strategic thinkers, consistently highlighted the role of passions and emotions in conflict, be it regular or irregular conflict. 'The intensity of action', Clausewitz observed, 'is a function of the motive's strength that is driving the action.' That motive may be a rational calculation or it may be emotional indignation (*Gemütserregung*), he added. 'If power is meant to be great, the latter can hardly be missing.'[51] Subversion, like insurgency, is driven by strong motives that mobilize supporters, volunteers, and activists – and, if violence comes into play, fighters and insurgents.

Another revered military thinker, David Galula, described the driving force behind an insurgent group as the cause. An insurgency's treasure would be a 'monopoly of a dynamic cause', wrote the French counterinsurgency expert in the 1960s.[52] But 50 years later, the demise of grand ideologies[53] and the rise of highly networked movements have altered the logic of dynamic causes. Not grand narratives, but highly specific issues are likely to mobilize a critical mass of enraged activists, if only temporarily. Non-attribution

has lowered the costs and risks of activism – but it has also lowered the costs and risks of stopping activism again. Consequently the potential for subversion is changing: entering into subversive activity has become easier, but taking subversion a critical step further into the realm of actual politics, to successful insurgency and ultimately to governance, has become harder.[54] Three brief examples will illustrate this point.[55]

A highly insightful example for non-violent subversion is Anonymous, a loose and leaderless movement of activists. Supporters conceal their identities and unite around a self-defined cause, often promoting free speech and agitating against censorship. The movement's motto is frequently posted at the end of announcements: *We are Anonymous. We are Legion. We do not forgive. We do not forget. Expect us.* The actions undertaken by Anonymous activists may have a political agenda or they may just be a crude form of entertainment.[56] Volunteers may be 'doing it for the lulz', as a phrase from internet culture has it. 'Lulz' is a concept related to the German idea of *Schadenfreude*, derived from a plural of 'lol', which stands for laugh-out-loud.[57] An example of the latter was Anonymous' 'YouTube porn day', a concerted prankster raid on 20 May 2009 where hundreds of pornographic videos were defiantly uploaded to the popular video-sharing site, allegedly to retaliate against the removal of music videos.[58]

The movement is best known for two high-profile political operations, although it has undertaken many more. Its first big campaign, known as 'Project Chanology', targeted the Church of Scientology and was launched on 21 January 2008 with a YouTube video that has since been viewed more than four million times.[59] When Scientology tried to censor the video, Anonymous activists reacted with DDoS attacks on Scientology's website as well as several waves of demonstrations in front of the sect's main centers worldwide, often wearing Guy Fawkes masks, adopted from the film *V for Vendetta.* The global turnout on some days was as high as 8,000 protesters. The campaign was widely covered in the international press.

A second example is Anonymous' perhaps most striking operation, a devastating assault on HBGary Federal, a technology security company. HBGary's clients included the US government and companies like McAfee. The firm with the tag-line *detecting tomorrow's malware today* had analyzed GhostNet and Aurora, two of the most sophisticated known threats. In early February 2011, Aaron Barr, then its chief executive officer (CEO), wanted more public visibility and announced that his company had infiltrated Anonymous and planned to disclose details soon. In reaction, Anonymous hackers infiltrated HBGary's servers, erased data, defaced its website with a letter ridiculing the firm with a download link to a leak of more than 40,000 of its emails to The Pirate Bay, took down the company's phone system, usurped the CEO's twitter stream, posted his social security number, and clogged up fax machines.[60] Anonymous activists had used a number of methods, including SQL injection, a code injection technique that exploits faulty database requests. 'You brought this upon yourself. You've tried to bite the Anonymous hand, and now the Anonymous hand is bitch-slapping you in the face', said the letter posted on the firm's website.[61] The attack badly pummeled the security company's reputation.

The 'Anon' movement and several assorted splinter-groups, such as LulzSec or AntiSec, have subsequently gained notoriety and attracted significant media attention. The best-known attacks successfully targeted the FBI, the CIA, the Navy as well as

American government contractors such as Booz Allen Hamilton, IRC Federal, ManTech, and even the British tabloid *The Sun*. As a result, several mostly young hackers were arrested worldwide. The sophistication of their attacks, it should be noted, remains limited as the attackers were mainly going after 'low hanging fruit'.[62] The specific causes that motivated the activists were as varied and fickle as the attacks themselves.

Other examples of subversion were the politically motivated DDoS attacks in Estonia and Georgia. On the one hand the target of these attacks had a social dimension: cutting the information flow between governments, the media, and its citizens, thus undermining citizens' trust in their leaders' authority and competence. On the other hand the way these attacks were executed had a stronger social dimension: many of the predominantly Russian patriotic hackers, 'hacktivists', or 'script kiddies' who voluntarily downloaded a relatively primitive attack code did so for emotional reasons, because they were outraged by what they saw as anti-Russian policies, perhaps because they wanted to impress peers. Pulling off such an attack is relatively simple, requiring 'just a lot of people getting together and running the same tools on their home computers,' wrote Jose Nazario of Arbor Networks about the Estonia incident.[63] Steven Adair of *Shadow Server* concluded, 'The average user is now getting involved and helping to attack Georgian websites.' He dubbed this the 'grass roots effect' of cyber attacks.[64]

Another such example is the tussle between Israeli and Arab activists that played out during Operation 'Cast Lead' in January 2009. Many Israeli websites, often from small companies, were defaced during the short war. One simple pro-Palestinian attack tool was named after Mohammad al-Durra, a Palestinian child allegedly killed by Israeli soldiers in 2000. One notable pro-Israeli initiative was a voluntary botnet, 'Help Israel Win', which allowed individuals to voluntarily delegate control of their computers to the botnet server after downloading the 'Patriot DDoS tool', which ran in a personal computer's background while autonomously updating the client with addresses to target. The Israeli voluntary botnet was organized, according to the website's description, by 'a group of students who are tired of sitting around doing nothing while the citizens of Sderot and the cities around the Gaza Strip are suffering.'[65] In Estonia, Georgia, and Israel, riots and demonstrations were practically extended into cyberspace, even if the volunteers did not always act without the assistance of more skilled individuals.[66] In such situations, participation and (relatively) easy handling of the technology that enables participation may be even more significant than the sophistication of these technologies. The global jihad took this dynamic a step further.

The Internet, social media and the spread of mobile phones with video cameras had a profound effect on subversion, including subversive violence, insurgency, and even terrorism. Political violence in the twenty-first century, especially the global jihadi movement, has become an Internet-enhanced phenomenon. For jihadis, cyberspace is neither just target nor weapon, but an essential platform. That platform is used to reach out to external audiences both hostile and friendly. But more importantly it is a vehicle for internal debate and cohesion. On extremist forums, social dynamics and ideological debates among acolytes take center stage, not achieving technical prowess. Know-how of bomb-making techniques, complete with details and educational videos, are also available online. But virtual training camps cannot replace brick-and-mortar training camps, and when such substitutes were tried, the technological sophistication of attacks

has dropped. Online instructional material is less important for the terrorist movement's continuity than the ideological discussion of the various causes of resistance under the banner of jihad. Jihadism's web presence, in short, keeps alive a *strong cause at the fringe* with a persistent and stable following, albeit a small one.

An instructive counter-example is the Arab Spring of 2011. Initially the Arab youth movements that threatened the established order in Tunisia, Egypt, Libya, Syria, Yemen and elsewhere also had a web presence on social media platforms – but combined with a *strong cause in the mainstream of their societies* with a fast-growing following. Once the initial spark started a larger political movement, street protests gained a revolutionary dynamic that could barely be stopped, neither by shutting down the web nor by the state's security forces.

Conclusion

The levels of technical and social sophistication required for sabotage and subversion are inversely related. At closer inspection the required technical prowess increases from subversion, to espionage, to sabotage. The inverse applies to the required social mobilization: the mobilization of popular support is essential for subversion, perhaps helpful in espionage, and largely irrelevant for sabotage. Successful sabotage is primarily a function of the *quality* of the attacker's technical sophistication and the available intelligence; successful subversion is primarily a function of the *quantity* of supporters mobilized by the strength of political ideas and social causes. This analysis leads to three conclusions that stand in contradiction to the prophecies of cyber war.

The first conclusion is about subversion. In the past and present, not high-tech but low-tech has been more likely to lead to an escalation of violence, instability, and ultimately even war. In the twenty-first century, the one type of political offence with the greatest potential to unleash instability and violence may not be technologically highly sophisticated sabotage, but technically rather primitive subversion. Yet the Internet facilitates an unexpected effect: specific social and political causes may persist in subcultures and niche groups, either temporarily or over an extended time, either violently or non-violently – and they may never cease attracting followers yet never go mainstream. These movements may be cause-driven to a significant extent, and less dependent on leaders, organization, and mass support than classical insurgent groups. Weak causes become stronger in the sense that they garner enough support to persist over an extended period of time, constantly maintaining a self-sufficient, self-recruiting, but also self-limiting number of supporters and activists.

The second finding concerns more sophisticated cyber offenses. Conventional wisdom holds that cyberspace turns the offense/defense balance on its head by making attacking easier and more cost-effective while making defending harder and more resource-intense. Cyber attack, the standard argument goes, increased the attacker's opportunities and the amount of damage to be done while decreasing the risks (sending special code is easier than sending special forces).[67] Hence expect more sabotage and more saboteurs. This may have it exactly wrong: quality matters more than quantity. The number of actors that are able to pull off an offensive and complex Stuxnet-class sabotage operation is likely to be smaller than commonly assumed. Cyber sabotage can be

more demanding than the brick-and-mortar kind, even if the required resources are dwarfed by the price of complex conventional weapon systems.[68] Vulnerabilities have to be identified before they can be exploited; complex industrial systems need to be understood first; and a sophisticated attack vehicle may be so fine-tuned to one specific target configuration that a generic use may be difficult or impossible (consider a highly sophisticated rocket that can only be fired against one single target and at nothing else, even if some of its components may be reused).[69] What follows may be a new trend: the level of sophistication required to find an opportunity and to stage a successful cyber sabotage operation is rising. The better the protective and defensive setup of complex systems, the more sophistication, the more resources, the more skills, the more specificity in design, and the more organization is required from the attacker. Only very few sophisticated strategic actors may be able to pull off top-range computer sabotage operations.

The third conclusion is about defenses. The world's most sophisticated cyber forces have an interest in openness if they want to retain their edge, especially on the defensive. The precise offensive capabilities of the United States but also of other countries like Israel, France, China or North Korea are highly classified. There is much reason to assume that many spying operations are unknown to the victim. Even sabotage through logic bombs may have been already prepared without the knowledge of the defender. There may even be an incentive for governments as well as large firms to hide the true extent of cyber attacks, if they come to their attention, lest they would expose their vulnerabilities and damage their reputation as a place for secure investment. But cyber *defenses* of the most sophisticated countries should be more transparently presented. Only openness and oversight can expose and reduce weaknesses in organization, priorities, technology, and vision.

This article argued that the world never experienced an act of cyber war, which would have to be violent, instrumental, and – most importantly – politically attributed. No attack on record meets all of these criteria. Instead, the last decade saw increasingly sophisticated acts of network-enabled sabotage, espionage, and subversion. These activities can of course support military operations, and they have been used for that purpose for centuries. But the question is if a trend is leading to inevitable acts of stand-alone cyber war, with code as the main weapon, not as an auxiliary tool that is nice to have.

In the 1950s and 1960s, when Giraudoux was translated into English, the world faced another problem that many thought was inevitable: nuclear exchange. Herman Kahn, Bill Kaufmann, and Albert Wohlstetter were told that nuclear war could not be discussed publicly, as Richard Clarke pointed out in his alarmist book, *Cyber War*. He rightly concluded that as with nuclear security, there should be more public discussion on cyber security because so much of the work has been stamped secret. But in many ways the comparison between nuclear war and cyber conflict, although often made, is misplaced and problematic. This should be obvious when the Pearl Harbor comparison or the Hiroshima-analogy is given a second thought: unlike the nuclear theorists in the 1950s, cyber war theorists of the 2010s have never experienced the actual use of a deadly cyber weapon, let alone a devastating one like Little Boy. There was no and there is no Pearl Harbor of cyber war. Unless significantly more evidence and significantly more detail are presented publicly by more than one agency, we have to conclude that there will not be a Pearl Harbor of cyber war in the future either.[70] Then the heading of this article

should not be understood with Giraudoux's sense of fine irony, but literally. Needless to say, Cassandra could still have the last word.

Acknowledgements

Notes on contributor

Thomas Rid is a Reader in War Studies at King's College London and a non-resident fellow at the Center for Transatlantic Relations at the School for Advanced International Studies (SAIS), Johns Hopkins University, Washington, DC. In 2009/2010, Rid was a visiting scholar at the Hebrew University and the Shalem Center in Jerusalem. From 2006 to 2009 he worked at the Woodrow Wilson Center and the RAND Corporation in Washington, and at the Institut français des relations internationales in Paris. Rid published three books, *Understanding Counterinsurgency* (Routledge 2010, co-edited with Tom Keaney), *War 2.0* (Praeger 2009, with Marc Hecker) and *War and Media Operations* (Routledge 2007). More at http://thomasrid.org

Notes

1 Jean Giraudoux, *Tiger at the Gates (La Guerre De Troie N'aura Pas Lieu)*, translated by Christopher Fry (New York: OUP 1955).
2 John Arquilla and David Ronfeldt, 'Cyberwar is Coming!', *Comparative Strategy* 12/2 (1993), 141–65.
3 William J. Lynn, 'Defending a New Domain', *Foreign Affairs* 89/5 (2010), 101.
4 Richard A. Clarke, and Robert K. Knake, *Cyber War* (New York: Ecco 2010), 261.
5 Lisa Daniel, 'Panetta: Intelligence Community Needs to Predict Uprisings', *American Forces Press Service*, 11 Feb. 2011.
6 Michael Joseph Gross, 'A Declaration of Cyber-War', *Vanity Fair*, April 2011.
7 Carl von Clausewitz, *Vom Kriege* (Berlin: Ullstein 1832, 1980), 27.
8 One of the most creative and important theoreticians of deterrence, Jack Gibbs, once pointed out that fear and the threat of force are integral ingredients of deterrence, 'Unless threat and fear are stressed, deterrence is a hodgepodge notion.' Jack P. Gibbs, 'Deterrence Theory and Research', in Gary Melton, Laura Nader and Richard A. Dienstbier (eds), *Law as a Behavioral Instrument* (Lincoln: Univ. of Nebraska Press 1986), 87.
9 Thomas Mahnken, in a useful conceptual appraisal of cyber war, also uses Clausewitz's definition of war as violent, political, and 'interactive', and argues that the basic nature of war was neither fundamentally altered by the advent of nuclear weapons nor by cyber attack. Thomas G. Mahnken, 'Cyber War and Cyber Warfare', in Kristin Lord and Travis Sharp (eds), *America's Cyber Future: Security and Prosperity in the Information* Age, Vol. 2 (Washington DC: CNAS 2011), 53–62.
10 Clausewitz, *Vom Kriege*, 29.
11 '[Der Gegner] gibt mir das Gesetz, wie ich es ihm gebe', ibid., 30.
12 Ibid., 35.
13 In *Vom Kriege*, Clausewitz uses similar phrases a few times. This quote is a translation of the heading of Book 1, Chapter 24, 'Der Krieg ist einer bloße Fortsetzung der Politik mit anderen Mitteln', ibid., 44.
14 This statement is not statement about the different levels of war: connecting between the political, strategic, operation, and tactical levels always remains a challenge.

15 This problem has been extensively discussed also among legal scholars. For an excellent recent overview, see Matthew C. Waxman, 'Cyber-Attacks and the Use of Force', *The Yale Journal of International Law* 36 (2011), 421–59.

16 For a particularly vividly told scenario, see the opening scene of Clarke and Knake, *Cyber War*.

17 See, for instance, Yoram Dinstein, 'Computer Network Attacks and Self-Defense', *International Law Studies* 76 (2002), 103. Arguing from a legal perspective, Dinstein also stresses 'violent consequences'.

18 More on this argument, Waxman, 'Cyber-Attacks and the Use of Force', 436.

19 Michael V. Hayden, 'The Future of Things "Cyber" ', *Strategic Studies Quarterly* 5/1 (Spring 2011) 3.

20 Thomas C. Reed, *At the Abyss* (New York: Random House 2004), 268–9.

21 Clarke and Knake, *Cyber War*, 93.

22 Anatoly Medetsky, 'KGB Veteran Denies CIA Caused '82 Blast', *Moscow Times*, 18 March 2004.

23 An accidental gasoline explosion that occured in Bellingham, WA on 10 June 1999, is sometimes named as a violent cyber incident; three youths were killed. Although the relevant SCADA system was found directly accessible by dial-in modem, no evidence of hacking was uncovered in the official government report. See, National Transportation Safety Board, 'Pipeline Rupture and Subsequent Fire in Bellingham, Washington, June 10, 1999', Pipeline Accident Report NTSB/PAR-02/02 (Washington DC, 2002), 64.

24 Eneken Tikk, Kadri Kaska and Liis Vihul, *International Cyber Incidents* (Tallinn: CCDCOE 2010), 17.

25 These disruptions were the worst of the entire 'cyber war' according to ibid., 20.

26 'Estonia has no evidence of Kremlin involvement in cyber attacks', *Ria Novosti*, 6 Sept. 2007. It should also be noted that Russian activists and even a State Duma Deputy (although perhaps jokingly) have claimed to be behind the attacks, see Gadi Evron, 'Authoritatively, Who was Behind the Estonian Attacks?' *Darkreading*, 17 March 2009. See also, Gadi Evron, 'Battling Botnets and Online Mobs', *Science & Technology* (Winter/Spring 2008), 121–8.

27 Tim Espiner, 'Estonia's cyberattacks: lessons learned, a year on', *ZDNet UK*, 1 May 2008.

28 Андрей Злобин, Ксения Болецкая, 'Электронная бомба,' *Ведомости*,' [Andrey Zlobin and Xenia Boletskaya, 'E-bomb', *Vedomosti*] 28 May 2007, <http://bitly.com/g1M9Si>.

29 The intensity of the attacks was high, with traffic reaching 211.66 Mbps on average, peaking at 814.33 Mbps, see Jose Nazario, 'Georgia DDoS Attacks – A Quick Summary of Observations', *Security to the Core (Arbor Networks)*, 12 Aug. 2008.

30 Eneken Tikk, Kadri Kaska, Kristel Rünnimeri, Mari Kert, Anna-Maria Talihärm and Liis Vihul, *Cyber Attacks against Georgia* (Tallinn: CCDCOE 2008), 12. Jeffrey Carr, a cyber security expert, published a report that concluded that Russia's Foreign Military Intelligence Agency (GRU) and Federal Security Service (FSB) probably helped coordinate the attacks, not independent patriotic hackers. But to date, this was neither proven nor admitted.

31 David A. Fulghum, Robert Wall and Amy Butler, 'Israel Shows Electronic Prowess', *Aviation Week & Space Technology* 168, 25 Nov. 2007; David A. Fulghum, Robert Wall and Amy Butler, 'Cyber-Combat's First Shot', *Aviation Week & Space Technology* 167, 16 Nov. 2007, 28–31.

32 John Markoff, 'A silent attack, but not a subtle one', *New York Times*, 26 Sept. 2010.

33 Sally Adee, 'The Hunt for the Kill Switch', *IEEE Spectrum*, May 2008.

34 Gross, 'A Declaration of Cyber-War'.

35 Ralph Langner, 'What Stuxnet is All About', *The Last Line of Cyber Defense*, 10 Jan. 2011.

36 Nicolas Falliere, Liam O Murchu and Eric Chien, *W32.Stuxnet Dossier. Version 1.4* (Symantec 2011), 3.

37 Ibid., 3.

38 This is Ralph Langner's target theory. The question if Stuxnet's code 417 'warhead' was disabled or not is controversial among engineers. See ibid., 45 as well as Ralph Langner, 'Matching Langner's Stuxnet Analysis and Symantec's Dossier Update', *The Last Line of Cyber Defense*, 21 Feb. 2011.

39 Ralph Langner, 'Cracking Stuxnet', *TED Talk*, March 2011.

40 William J. Broad, John Markoff and David E. Sanger, 'Israeli test on worm called crucial in Iran nuclear delay', *New York Times*, 16 Jan. 2011, A1.

41 Nicolas Falliere, Liam O Murchu and Eric Chien, *W32.Stuxnet Dossier. Version 1.4* (Symantec 2011), 3.

42 See Gary McGraw's discussion with Ralph Langner on Cigital's *Silver Bullet*, 25 Feb. 2011, <www.cigital.com/silverbullet/show-059/>.

43 Ellen Nakashima and Brian Krebs, 'Contractor blamed in DHS data breaches', *Washington Post*, 24 Sept. 2007, A1.

44 Bradley Graham, 'Hackers attack via Chinese web sites', *Washington Post*, 25 Aug. 2005.

45 William J. Lynn, 'Defending a New Domain', *Foreign Affairs* 89/5 (2010), 97. Clarke says the spyware was of Russian origin, see next footnote.

46 Clarke and Knake, *Cyber War*, 171.

47 Ron Deibert, and Rafal Rohozinsky, *Tracking Ghostnet* (Toronto: Munk Centre for International Studies 2009), 47.

48 Rhys Blakely, 'MI5 alert on China's cyberspace spy threat', *The Times*, 1 Dec. 2007, 1.

49 Clarke and Knake, *Cyber War*, 232–4.

50 Charles Arthur, 'William Hague reveals hacker attack on Foreign Office in call for cyber rules', *Guardian*, 6 Feb. 2011.

51 'Die *Energie* des Handels drückt die Stärke des Motivs aus, wodurch das Handel hervorgerufen wird, das Motiv mag nun in einer Verstandesüberzeugung oder einer Gemütserregung seinen Grund haben. Die letztere darf aber schwerlich fehlen, wo sich eine große Kraft zeigen soll.' Clausewitz, *Vom Kriege*, 69.

52 David Galula, *Counterinsurgency Warfare: Theory and Practice* (New York: Praeger 1964), 71.

53 For a historical discussion of ideology's role in guerrilla war, see Walter Laqueur, *Guerrilla: A Historical and Critical Study* (Boston: Little, Brown 1976).

54 Thomas Rid and Marc Hecker, 'The Terror Fringe', *Policy Review* 158 (Dec./Jan. 2010), 3–19.

55 For a more exhaustive list of politically motivated cyber-attacks, see Robin Gandhi, Anup Sharma, William Mahoney, William Sousan, Qiuming Zhu and Phillip Laplante, 'Dimensions of Cyber Attacks', *IEEE Technology and Society Magazine* (Spring 2011), 28–38.

56 A good analysis of Anonymous is Adrian Crenshaw, 'Crude, Inconsistent Threat: Understanding Anonymous', *Irongeek.com*, 28 March 2011, <http://bitly.com/e87PeA>.

57 An explanation and a good introduction into the sense of humor of that subculture is at <http://ohinternet.com/Lulz>.

58 In a video titled *Jonas Brother Live On Stage*, a viewer commented: 'I'm 12 years old and what is this?' The phrase, quoted in a BBC story, went on to become an Internet meme. Siobhan Courtney, 'Pornographic videos flood YouTube', *BBC News*, 21 May 2009.

59 <www.youtube.com/watch?v=JCbKv9yiLiQ>.

60 Peter Bright, 'Anonymous speaks: the inside story of the HBGary hack', *Ars Technica*, 15 Feb. 2011.

61 Anonymous, 'This Domain Has Been Seized . . .', archived at <http://bitly.com/hWvZXs>.

62 See 'AnonyLulzyAntiSec, Just What Have You Done for Us Lately?,' *Krypt3ia*, 22 July 2011, <http://bitly.com/qQJwiu>

63 Charles Clover, 'Kremlin-backed group behind Estonia cyber blitz', *Financial Times*, 11 March 2009. See also Jose Nazario, 'Politically Motivated Denial of Service Attacks', in Christian Czosseck and Kenneth Geers (eds), *The Virtual Battlefield*, (Amsterdam; Washington, DC: IOS Press 2009), 163–81.

64 Steven Adair, 'Georgian Attacks: Remember Estonia?', *Shadow Server*, 13 Aug. 2008.

65 See also Jeffrey Carr, 'Project Grey Goose Phase II Report', *GreyLogic*, 20 March 2009, Chapter 2.

66 Rain Ottis, 'From Pitchforks to Laptops: Volunteers in Cyber Conflicts', Conference on Cyber Conflict Proceedings (2010).

67 See for instance, Martin Libicki, *Cyberdeterrence and Cyberwar* (Santa Monica, CA: RAND Corporation 2009), 32–3.

68 Ralph Langner, 'A declaration of bankruptcy for US critical infrastructure protection', *The Last Line of Cyber Defense*, 3 June 2011.

69 See Roberta Stempfley and Sean McGurk, *Testimony*, US House of Representatives, Committee on Energy and Commerce, 26 July 2011, 7, '[S]ophisticated malware of this type potentially has the ability to gain access to, steal detailed proprietary information from, and manipulate the systems that operate mission-critical processes within the nation's infrastructure.'

70 In May 2011, the Obama White House stressed deterrence in cyberspace and made clear that 'certain hostile acts conducted through cyberspace' could trigger a military response by America (in using 'all necessary means', the document explicitly included military means). But the White House did not make clear what certain hostile acts (p. 14) or 'certain aggressive acts in cyberspace' (p. 10) actually mean, Barack Obama, *International Strategy for Cyberspace* (Washington, DC: White House, May 2011).

Bibliography

Adair, Steven, 'Georgian Attacks: Remember Estonia?', *Shadow Server*, 13 Aug. 2008.

Adee, Sally, 'The Hunt for the Kill Switch', *IEEE Spectrum*, May 2008.

Arquilla, John and David Ronfeldt, 'Cyberwar is Coming!', *Comparative Strategy* 12/2 (1993), 141–65.

Arthur, Charles, 'William Hague reveals hacker attack on Foreign Office in call for cyber rules', *Guardian*, 6 Feb. 2011.

Blakely, Rhys, 'MI5 alert on China's cyberspace spy threat', *The Times*, 1 Dec. 2007.

Bright, Peter, 'Anonymous speaks: the inside story of the HBGary hack', *Ars Technica*, 15 Feb. 2011.

Broad, William J., John Markoff and David E. Sanger, 'Israeli test on worm called crucial in Iran nuclear delay', *New York Times*, 16 Jan. 2011, A1.

Carr, Jeffrey, 'Project Grey Goose Phase II Report', *GreyLogic*, 20 March 2009, Chapter 2.

Clarke, Richard A. and Robert K. Knake, *Cyber War* (New York: Ecco 2010).

Clausewitz, Carl von, *Vom Kriege* (Berlin: Ullstein 1832, 1980).

Clover, Charles, 'Kremlin-backed group behind Estonia cyber blitz', *Financial Times*, 11 March 2009.

Courtney, Siobhan, 'Pornographic videos flood YouTube', *BBC News*, 21 May 2009.

Crenshaw, Adrian, 'Crude, Inconsistent Threat: Understanding Anonymous', *Irongeek.com*, 28 March 2011, <http://bitly.com/e87PeA>.

Daniel, Lisa, 'Panetta: Intelligence Community Needs to Predict Uprisings', *American Forces Press Service*, 11 Feb. 2011.

Deibert, Ron and Rafal Rohozinsky, *Tracking Ghostnet* (Toronto: Munk Centre for International Studies 2009).

Dinstein, Yoram, 'Computer Network Attacks and Self-Defense', *International Law Studies* 76 (2002), 99–120.

Espiner, Tim, 'Estonia's cyberattacks: lessons learned, a year on', *ZDNet UK*, 1 May 2008.

Evron, Gadi, 'Battling Botnets and Online Mobs', *Science & Technology* (Winter/Spring 2008), 121–8.

Evron, Gadi, 'Authoritatively, Who was Behind the Estonian Attacks?' *Darkreading*, 17 March 2009.

Falliere, Nicolas, Liam O. Murchu and Eric Chien, *W32.Stuxnet Dossier. Version 1.4* (Symantec 2011).

Fulghum, David A., Robert Wall and Amy Butler, 'Cyber-Combat's First Shot', *Aviation Week & Space Technology* 167, 16 Nov. 2007, 28–31.

Fulghum, David A., Robert Wall and Amy Butler, 'Israel Shows Electronic Prowess', *Aviation Week & Space Technology* 168, 25 Nov. 2007.

Galula, David, *Counterinsurgency Warfare: Theory and Practice* (New York: Praeger 1964).

Gandhi, Robin, Anup Sharma, William Mahoney, William Sousan, Qiuming Zhu and Phillip Laplante, 'Dimensions of Cyber Attacks', *IEEE Technology and Society Magazine* (Spring 2011), 28–38.

Gibbs, Jack P., 'Deterrence Theory and Research', in Gary Melton, Laura Nader and Richard A. Dienstbier (eds), *Law as a Behavioral Instrument* (Lincoln: Univ. of Nebraska Press 1986).

Giraudoux, Jean, *Tiger at the Gates [La Guerre De Troie N'aura Pas* Lieu], translated by Christopher Fry (New York: Oxford University Press 1955).

Graham, Bradley, 'Hackers attack via Chinese web sites', *Washington Post*, 25 Aug. 2005.

Gross, Michael Joseph, 'A declaration of cyber-war', *Vanity Fair*, April 2011.

Hayden, Michael V., 'The Future of Things Cyber', *Strategic Studies Quarterly* 5/1 (Spring 2011), 3–7.

Jose Nazario, 'Georgia DDoS Attacks – A Quick Summary of Observations', *Security to the Core (Arbor Networks)*, 12 Aug. 2008.

Langner, Ralph, 'What Stuxnet is All About', *The Last Line of Cyber Defense*, 10 Jan. 2011.

Langner, Ralph, 'Matching Langner's Stuxnet analysis and Symantec's dossier update', *The Last Line of Cyber Defense*, 21 Feb. 2011.

Langner, Ralph, 'Cracking Stuxnet', *TED Talk*, March 2011.

Langner, Ralph, 'A declaration of bankruptcy for US critical infrastructure protection', *The Last Line of Cyber Defense*, 3 June 2011.

Laqueur, Walter, *Guerrilla: A Historical and Critical Study* (Boston: Little, Brown 1976).

Libicki, Martin, *Cyberdeterrence and Cyberwar* (Santa Monica, CA: RAND Corporation 2009).

Lynn, William J., 'Defending a New Domain', *Foreign Affairs* 89/5 (2010), 97–108.

Mahnken, Thomas G., 'Cyber War and Cyber Warfare', in Kristin Lord and Travis Sharp (eds), *America's Cyber Future: Security and Prosperity in the Information* Age, Vol. 2, (Washington, DC: CNAS 2011), 53–62.

Markoff, John, 'A silent attack, but not a subtle one', *New York Times*, 26 Sept. 2010.

Medetsky, Anatoly, 'KGB veteran denies CIA caused '82 blast', *Moscow Times*, 18 March 2004.

Nakashima, Ellen and Brian Krebs, 'Contractor blamed in DHS data breaches', *Washington Post*, 24 Sept. 2007, p.A1.

National Transportation Safety Board, 'Pipeline Rupture and Subsequent Fire in Bellingham, Washington, June 10, 1999', Pipeline Accident Report NTSB/PAR-02/02 (Washington DC, 2002).

Nazario, Jose, 'Georgia DDoS Attacks – A Quick Summary of Observations', *Security to the Core (Arbor Networks)*, 12 Aug. 2008.

Nazario, Jose, 'Politically Motivated Denial of Service Attacks', in Christian Czosseck and Kenneth Geers (eds) *The Virtual Battlefield* (Amsterdam/Washington DC: IOS Press 2009), 163–81.

Obama, Barack, *International Strategy for Cyberspace* (Washington DC: White House, May 2011).

Ottis, Rain, 'From Pitchforks to Laptops: Volunteers in Cyber Conflicts', Conference on Cyber Conflict Proceedings (2010).

Reed, Thomas C., *At the Abyss* (New York: Random House 2004).

Rid, Thomas and Marc Hecker, 'The Terror Fringe', *Policy Review* 158 (December/Jan. 2010), 3–19.

Tikk, Eneken, Kadri Kaska, Kristel Rünnimeri, Mari Kert, Anna-Maria Talihärm and Liis Vihul, *Cyber Attacks against Georgia* (Tallinn: CCDCOE 2008).

Tikk, Eneken, Kadri Kaska and Liis Vihul, *International Cyber Incidents* (Tallinn: CCDCOE 2010).

Waxman, Matthew C., 'Cyber-Attacks and the Use of Force', *Yale Journal of International Law* 36 (2011), 421–59.

24 The lost meaning of strategy

Hew Strachan

On 19 November 2003, President Bush delivered a major speech on international relations at the Royal United Services Institute in Whitehall in London. The event was controversial; however, the speech was less so. Indeed, most British commentators welcomed it as a clear statement of United States foreign policy. 'We will help the Iraqi people establish a peaceful and democratic country in the heart of the Middle East. And by doing so, we will defend our people from danger,' Bush declared. He then went on: 'The forward strategy of freedom must also apply to the Arab–Israeli conflict.'[1]

This last sentence is puzzling. Strategy is a military means; freedom in this context is a political or even moral condition. Strategy can be used to achieve freedom, but can freedom be a strategy in itself? A fortnight after Bush's speech, on 2 December 2003, the British Foreign and Commonwealth Office published its first White Paper on foreign policy since the Callaghan government of 1976–79. Its focus was on terrorism and security; it was concerned with illegal immigration, drugs, crime, disease, poverty and the environment; and it included – according to the Foreign Office's website – 'the UK's strategy for policy, public service delivery and organisational priorities'. The punctuation created ambiguity (were public service delivery and organisational priorities subjects of the paper or objects of the strategy?), but the central phrase was the first one. It suggested that the Foreign Office now developed strategy to set policy, rather than policy to set strategy. The title of the White Paper was *UK International Priorities: A Strategy for the Foreign and Commonwealth Office*.[2] Introducing it in Parliament, the foreign secretary, Jack Straw, explained that 'the FCO strategy analyses the ways in which we expect the world to change in the years ahead'. There was no mention of diplomacy or foreign policy, the traditional domains of foreign ministries. Moreover, the timing of the White Paper's publication created wry, if cynical, comment. It managed – just – to put the horse before the cart: the Ministry of Defence's White Paper, *Delivering Security in a Changing World*, appeared a week later.[3] Those who wondered whether that too would establish a strategy for policy, as opposed to a policy for strategy, might point to the degree to which the Ministry of Defence had already come to set the foreign policy agenda. The key statement on British policy after the attacks of 9/11 was neither *UK International Priorities* nor *Delivering Security in a Changing World*, but the so-called 'New Chapter' to the Ministry of Defence's *Strategic Defence Review* published over a year previously, in July 2002.[4]

The confusion in Bush's speech and in the Foreign Office's White Paper embodies the existential crisis which strategy confronts. The word 'strategy' has acquired a universality

which has robbed it of meaning, and left it only with banalities. Governments have strategies to tackle the problems of education, public health, pensions and inner-city housing. Advertising companies have strategies to sell cosmetics or clothes. Strategic studies flourish more verdantly in schools of business studies than in departments of international relations. Airport bookstalls carry serried ranks of paperbacks reworking Sun Tzu's *The Art of War*. Gerald Michaelson is a leader in this field: his titles are self-explanatory – *Sun Tzu: the Art of War for Managers – 50 Strategic Rules* (2001) and *Sun Tzu Strategies for Marketing: 12 Essential Principles for Winning the War for Customers* (2003). But strategic studies are not business studies, nor is strategy – despite the beliefs of George Bush and Jack Straw to the contrary – a synonym for policy.

Clausewitz defined strategy as 'the use of the engagement for the purpose of the war'.[5] He did not define policy. Clausewitz's focus was on the nation and the state, not on party politics. Too much, therefore, can be made of the ambiguity created by the fact that the German word, *Politik*, means policy and politics: this may matter less for our understanding of *On War* than for our interpretations of later commentators. Clausewitz was at least clear that conceptually *Politik* was not the same as strategy, even if the two were interwoven. When he concluded that war had its own grammar but not its own logic, he implied that strategy was part of that grammar. By contrast policy provided the logic of war, and therefore enjoyed an overarching and determining position which strategy did not. Clausewitz's definition of strategy was therefore much narrower than that of contemporary usage. He too would have been perplexed by George Bush's 'strategy of freedom' and the Foreign Office's 'strategy for policy'.

The evolution of strategy

The word 'strategy' may have its roots in ancient Greek but that language preferred concrete nouns to abstract ones. '$\Sigma\tau\rho\acute{\alpha}\acute{\alpha}\tau\acute{\eta}\acute{\eta}\gamma o\varsigma$ (*strātēgos*)' meant 'general', but what the commander practised was more likely to be expressed by a verb. Moreover, for the Greeks, as for the medieval knights, what was done on the battlefield or in a siege was the conduct of war, and more a matter of what today would be called tactics.[6] The general's plans and his execution of manoeuvres in the lead-up to battle had no clear name until the late eighteenth century. The idea of strategy was a product of the growth of standing, professional armies on the one hand and of the Enlightenment on the other. In 1766 a French lieutenant-colonel, Paul Gideon Joly de Maizeroy, wrote: 'in an enlightened and learned age in which so many men's eyes are employed in discovering the numerous abuses which prevail in every department of science and art, that of war has had its observers like the rest'.[7] That book, *Cours de tactique, théoretique, pratique et historique*, as the title reveals, was about tactics, but over ten years later Joly de Maizeroy published his *Théorie de la guerre* (1777), in which he identified a second level to the art of war, a level which he called strategy, and which he saw as 'sublime' and depending on reason rather than rules:

> Making war is a matter of reflection, combination of ideas, foresight, reasoning in depth and use of available means . . . In order to formulate plans, strategy studies the relationship between time, positions, means and different interests, and takes

every factor into account . . . which is the province of dialectics, that is to say, of reasoning, which is the highest faculty of the mind.[8]

The Napoleonic wars confirmed the distinction between tactics and strategy, between what happened on the battlefield and what happened off it. The introduction of conscription meant that field armies tripled in size within two decades. Their coordination and supply made demands of a general that were clearly different from the business of firing a musket or thrusting with a sword. Napoleon himself tended not to use the word strategy, but those who wrote about what he had achieved certainly did – not only Clausewitz, but also Jomini (the most important military theorist of the nineteenth century) and the Austrian Archduke Charles. The latter had proved one of Napoleon's most redoubtable opponents, fighting him to a standstill at Aspern-Essling in 1809. Charles was of the view that 'strategy is the science of war: it produces the overall plans, and it takes into its hands and decides on the general course of military enterprises; it is, in strict terms, the science of the commander-in-chief'.[9]

Jomini saw the campaign of Marengo in 1800 as the defining moment of the new era, the moment that 'the system of modern strategy was fully developed'.[10] He split the art of war into six parts, of which statesmanship was the most important and strategy the second. The latter he defined as the art of properly directing masses upon the theatre of war, either for defence or for invasion,[11] and wrote, 'strategy is the art of making war upon the map, and comprehends the whole theatre of operations'.[12]

Jomini's classification dominated land warfare in Europe until the First World War. His ideas were plagiarised by military theorists across the continent, and they provided the axioms inculcated in the military academies which proliferated from the turn of the eighteenth and nineteenth centuries. His emphasis on planning, cartography and lines of communication meant that his definition of strategy became the *raison d'être* of the general staffs which were institutionalised during the course of the nineteenth century. By 1900 military men were, broadly speaking, agreed that strategy described the conduct of operations in a particular theatre of war. It involved encirclement, envelopment and manoeuvre. It was something done by generals.

This was 'traditional' strategy – based on universal principles, institutionalised, disseminated and at ease with itself. It acknowledged, too, that strategy did not embrace the entire phenomenon of war. Strategy was only one of three components which made up war – the central element sandwiched between national policy on the one hand and tactics on the other. Each was separate, but the three had to be kept in harmony.

The problem that confronted traditional strategy lay not in its definition but in its boundaries with policy. Many generals came to believe, as Moltke the elder told Bismarck in the Franco-Prussian war, that once war was declared the statesman should fall silent until the general delivered the victory.[13] Friedrich von Bernhardi, writing in 1912, said that 'if war is resolved upon, the military object takes the place of the political purpose'. But Bernhardi should not be quoted selectively (as he so often was in Britain after the outbreak of the First World War). He fully recognised that the object could not be fixed from a purely military viewpoint, but had to take into account the reciprocal effects of military action on political affairs. The commander who demanded the right to set the object himself, without regard to the political purpose, had to be rebuffed. 'War is always

a means only for attaining a purpose entirely outside its domain. War can, therefore, never itself lay down the purpose by fixing at will the military object.'[14]

Nor was this ambivalence about the dividing line between strategy and policy a symptom of Prussianism. A French general and one of the great military writers of his day, Jean Colin, declared in 1911 that 'once the war is decided on, it is absolutely necessary that a general should be left free to conduct it at his own discretion'.[15] Colin died in 1917, the year in which another French general, Henri Mordacq, became the military aide of Georges Clemenceau, the prime minister who not only united France's efforts in the prosecution of the First World War but also established most clearly the Third Republic's political primacy over the nation's army commanders. In 1912 Mordacq wrote a more nuanced discussion than Colin's on the relationship between policy and strategy in a democracy, one in which he stressed the need for the general to submit his plans for governmental approval to ensure that they conformed with the political objective. But he also reminded the government of its obligations: the civil power should indicate to the high command its political objective, and then it should let the soldiers get on with their job free of intervention. He quoted Moltke: 'strategy works uniquely in the direction indicated by policy, but at the same time it protects its complete independence to choose its means of action'.[16]

Strategy's propensity to replace policy was reflected at the institutional level. In the eighteenth and early nineteenth centuries policy and strategy were united in one man – the king or the emperor, Frederick the Great or Napoleon. In the states of the early twentieth century they could not be, however much Kaiser Wilhelm II may have believed they were. During the First World War, the machineries for the integration of policy and strategy either did not exist, as in Germany, Austria-Hungary and Russia, or emerged in fits and starts, as in Britain and France. Even in 1918, when the Entente allies appointed Ferdinand Foch their generalissimo, his principal task was the coordination of land warfare on the western front. He took charge of strategy traditionally defined. Less clear were the lines of responsibility between him and the Allied heads of state.

When the war was over, some strategic thinkers, most notably Basil Liddell Hart, would argue that it had been won not by land operations on the western front, but by the application of sea power through the blockade. Traditional definitions of strategy, those developed between, say, 1770 and 1918 by thinkers whom we would now classify as the classical strategists, were limited by more than just their focus on operations. They also neglected war at sea. The military historian needs to confront an existential question: why is there strategy on the one hand and naval strategy on other? Why is the use of the adjective 'naval' an indication that those who have written about the conduct of war at sea have not been incorporated into the mainstream histories of war?

'We are accustomed, partly for convenience and partly from lack of a scientific habit of thought, to speak of naval strategy and military strategy as though they were distinct branches of knowledge which had no common ground.' So wrote Julian Corbett, the first really important strategic thinker produced by Britain.[17] Corbett went on to argue that both naval and military strategy were subsumed by the theory of war, that naval strategy was not a thing by itself. His thinking in this respect was directly shaped by his reading of Clausewitz. In other words he located himself not in some maritime backwater but in the mainstream of classical strategic thought. His theory of war was that 'in

a fundamental sense [war] is a continuation of policy by other means'.[18] He went on: 'It gives us a conception of war as an exertion of violence to secure a political end which we desire to attain, and . . . from this broad and simple formula we are able to deduce at once that wars will vary according to the nature of the end and the intensity of our desire to attain it.'[19]

When Corbett addressed the officers at the Royal Naval War College before the First World War, he distinguished between what he called 'major strategy' and 'minor strategy'. Plans of operations, the selection of objectives and the direction of the forces assigned to the operation were now not strategy but minor strategy. Major strategy

> in its broadest sense has also to deal with the whole resources of the nation for war. It is a branch of statesmanship. It regards the Army and Navy as parts of the one force, to be handled together; they are instruments of war. But it also has to keep in view constantly the politico-diplomatic position of the country (on which depends the effective action of the instrument), and its commercial and financial position (by which the energy for working the instrument is maintained).[20]

Corbett had therefore begun to apply the word 'strategy' to policy and to see the two as integrated in a way that Clausewitz had not. Corbett's title 'major strategy' prefigures what Britons came to call 'grand strategy' and Americans 'national strategy'. This unites him with his near contemporary, Alfred Thayer Mahan. Both then and since, however, commentators on the two founders of naval thinking have tended to polarise their views. Corbett argued that sea power was only significant when it affected events on land; Mahan was critical of amphibious operations. Corbett concerned himself with trade defence; Mahan was sceptical about cruiser war. Corbett doubted the importance of fleet action; Mahan was its greatest advocate. But Mahan, like Corbett, was working towards a theory of grand strategy. Like Corbett and Clausewitz, Mahan was rooted in the classical strategic tradition, in his case through Jomini. But Jomini's influence, although evident in what Mahan said about naval strategy narrowly defined, should not obscure the novelty and innovative quality of what he said about sea power more broadly defined. For Mahan, strategic arguments were based on political economy. Maritime trade was vital to national prosperity, and naval superiority was essential to the protection of the nation's interests. That naval superiority in itself depended on the seafaring traditions of the population, the nation's culture and the state's political structure.[21] There was therefore a symbiotic link between sea power, liberal democracy and ideas of grand strategy. All three elements seemed to have been required to achieve synergy – a point made clear if we look at the third great titan of naval thought, Raoul Castex.

Castex wrote a five-volume treatise on strategy in the inter-war period. He was a French admiral, and France was a liberal democracy which had been sustained during the First World War through British credit and Atlantic trade. But France saw itself as a land power before it was a sea power. Castex began his five volumes by defining strategy in terms identical to those of the pre-1914 military writers: 'Strategy is nothing other than the general conduct of operations, the supreme art of chiefs of a certain rank and of the general staffs destined to serve as their auxiliaries'.[22] He had not changed this

formulation, originally written in 1927, a decade later. His discussion of the relationship between politics and strategy, and their reciprocal effects, treated the two as entirely separate elements, and concluded with a chapter entitled 'le moins mauvais compromis' ('the least bad compromise').[23] The key factor determining Castex's reluctance to embrace grand strategy as Corbett and Mahan had done was that France had vulnerable land frontiers. Its army was more important than its navy.

Sea-girt states, like Britain and the United States, freed – unlike France – from the need to maintain large standing armies for the purposes of defence against invasion, could develop along political lines that favoured individualism and capitalism. The prosperity thus engendered became the means to wage war itself – what Lloyd George, as Britain's chancellor of the exchequer in 1914, called the 'silver bullets'.[24] In 1923, these links – between peacetime preparation and the conduct of war itself, and between economic capability and military applications – prompted the military theorist, J.F.C. Fuller, to entitle a chapter of his book, *The Reformation of War*, 'The Meaning of Grand Strategy'.[25] He regarded the division of strategy into naval, military and now aerial components as 'a direct violation of the principle of economy of forces as applied to a united army, navy and air force, and hence a weakening of the principle of the objective'. Moreover,

> our peace strategy must formulate our war strategy, by which I mean that there cannot be two forms of strategy, one for peace and one for war, without wastage – moral, physical and material – when war breaks out. The first duty of the grand strategist is, therefore, to appreciate the commercial and financial position of his country; to discover what its resources and liabilities are. Secondly, he must understand the moral characteristics of his countrymen, their history, peculiarities, social customs and system of government, for all these quantities and qualities form the pillars of the military arch which it is his duty to construct.[26]

Here, as in other respects, Fuller's ideas were aped and developed by Liddell Hart. Pursuing also the trajectory set by Corbett, Liddell Hart believed that Britain's strategy should be shaped not according to patterns of continental land war but in a specifically British context, conditioned by politics, geography and economics. He therefore distinguished between 'pure strategy' and 'grand strategy'. Pure strategy was still the art of the general. But the role of grand strategy was 'to coordinate and direct all the resources of the nation towards the attainment of the political object of the war – the goal defined by national policy'.[27]

Conflation of strategy and policy

Liddell Hart cast a long shadow forward, influencing both the allies' conduct in the Second World War and their subsequent interpretation of it. The political leaders of Britain, the United States and the Soviet Union coordinated their plans: they practised grand strategy, refusing to treat the theatres of war in isolation and settling the relationship of one theatre to another. The coping stone to the British official history of the Second World War was the six volumes of the deliberately titled 'grand strategy' series,

two of them written by holders of Oxford's Chichele Chair in the History of War (as it is now dubbed), Norman Gibbs and Michael Howard. Although Howard's was the fourth volume in chronological sequence, it was the last but one to appear, and was published 16 years after the first. However, Howard found that the series' editor, J.R.M. Butler, had attempted no more helpful statement than to say of grand strategy that 'it is concerned both with purely military strategy and with politics'.[28] Howard therefore began his volume with a definition of grand strategy: 'Grand strategy in the first half of the twentieth century consisted basically in the mobilisation and deployment of national resources of wealth, manpower and industrial capacity, together with the enlistment of those of allied and, when feasible, of neutral powers, for the purpose of achieving the goals of national policy in wartime.'[29]

What had now happened – at least in Britain and the United States – was the conflation of strategy and policy. When Liddell Hart had himself defined grand strategy, he had admitted that it was 'practically synonymous with the policy which governs the conduct of war' and 'serves to bring out the sense of "policy in execution" '.[30] Edward Mead Earle, in the middle of the Second World War, defined strategy 'as an inherent element of statecraft at all times', and contended that grand strategy so integrated the policies and armaments of a nation that it could render the resort to war unnecessary.[31]

This conflation of strategy and policy has created particular problems for strategic theory shaped in the Anglo-American tradition since 1945, and particularly over the last 30 years. Earle was the dominant text up to and including the 1970s, a decade distinguished in 1976 by the publication of the English translation of Clausewitz's *On War* by Michael Howard and Peter Paret. Howard and Paret's edition gave the full text of Clausewitz a readership far larger than it had ever enjoyed before. Those readers, responding to Earle's injunction that strategy was an activity to be pursued in peace as well as in war, not least because the advent of nuclear weapons apparently gave them no choice, focused their attentions on chapter 1 of Book 1 of *On War*. That is of course the sole book of *On War* which is deemed to be fully finished, and it is the only book in which the idea of war's relationship to policy is fully developed. However, these new readers tended to interpret Clausewitz's understanding of policy and politics according to their own liberal lights, and not according to his. Policy was seen as controlling, guiding and even limiting war. The integration of strategy and policy was therefore a 'good thing' in a liberal and rationalist sense. But in Clausewitz's own day politics had the opposite effect – they removed the restraints on war. The French Revolution transformed the power of the state, and so transformed France's capacity to wage war. This is most evident not in Book I but in Book VIII of *On War*. 'As policy becomes more ambitious and vigorous, so will war, and this may reach the point where war attains its absolute form.'[32] In this passage Clausewitz seems clear in his own mind that the Napoleonic Wars had rendered real something that in Book I of *On War* he would treat as ideal, the notion of absolute war.

Moreover, the link between war and revolution suggests another reversal in the standard Anglo-Saxon interpretation of Clausewitz. War itself could effect domestic political change – the nation was constituted and defined through struggle. Clausewitz, for all that this article has quoted his definition of strategy, was not really concerned with definitions per se. He was interested in war as a phenomenon. War could be

existential, not instrumental, its waging a social and moral catharsis. War could itself create a political identity.[33]

Clausewitz was a German nationalist who hated France and who often expressed himself in accents that link him to the so-called German *Sonderweg* and even to the Nazis. With Prussia defeated at Jena in 1806 and humiliated thereafter, war had become for Clausewitz not an instrument of policy but policy in its highest form. Prussia had to wage war to find its own identity: its readiness to sustain the struggle was an end in itself. The political declaration of February 1812, his response to Prussia's acceptance of Napoleon's demand that it contribute troops to the invasion of Russia, turned humiliation into defiance:

> I believe and confess that a people can value nothing more highly than the dignity and liberty of its existence. That it must defend these to the last drop of its blood. That there is no higher duty to fulfil, no higher law to obey . . . That even the destruction of liberty after a bloody and honourable struggle assures the people's rebirth. It is the seed of life, which one day will bring forth a new, securely rooted tree.[34]

Revolutionaries like Guiseppe Mazzini in the nineteenth century or Franz Fanon in the twentieth expressed themselves in comparable terms. So too did many Germans in the inter-war period, convinced by the defeat of 1918 that the army had been 'stabbed in the back'. Clausewitz the German nationalist was at times closer in his thinking to Erich Ludendorff, the German army's first quartermaster general of 1916–18, than we care to acknowledge or than Ludendorff himself did. In his post-war book, *Der totale Krieg*, Ludendorff wrongly claimed that Clausewitz's conception of politics was restricted only to foreign policy, and went on say that 'politics, at least during the [First World] War, ought to have fostered the vital strength of the nation, and to have served the purpose of shaping the national life'.[35] It was – and is – fashionable to see Ludendorff as deranged by 1935, if not before, but his prediction of the next war, that it 'will demand of the nation to place its mental, moral, physical, and material forces in the service of the war',[36] was not so inaccurate. Ludendorff was writing about what his English translators called totalitarian war, a conflict which would require the mobilisation of the entire population for its prosecution.

> War being the highest test of a nation for the preservation of its existence, a totalitarian policy must, for that very reason, elaborate in peace-time plans for the necessary preparations required for the vital struggle of the nation in war, and fortify the foundations for such a vital struggle so strongly that they could not be moved in the heat of war, neither be broken or entirely destroyed through any measures taken by the enemy.[37]

As Carl Schmitt put it after the Second World War, only a people which can fight without consideration of limits is a political people.[38] The idea that politics could expand the way in which war was conducted was not just one entertained by fascists or Germans. Total war was a democratic idea. Clemenceau's government of 1917–18 had invoked

the rhetoric of the French Revolution to summon the nation and Churchill spoke of total war in Britain in 1940–42. Definitions of strategy therefore broadened because of the ambiguity between the categories of war and of politics which world war generated. In the immediate aftermath of 1945 the powers assumed, as Clausewitz had tended to do in 1815, that the future pattern of war would pursue a trajectory derived from the immediate past. Total war would become the norm.

The Cold War and the strategy of dissuasion

The advent of nuclear weapons confirmed and consolidated those trends. If used, they would ensure that war was total – at least in its destructive effects. To obviate this, theories of deterrence were developed and employed, which themselves conflated strategy and foreign policy. Deterrence itself then became the cornerstone of a new discipline, strategic studies, but strategic studies were focused not so much on what armies did in war as on how nations used the threat of war in peace. By 1960 Thomas Schelling defined strategy not as 'concerned with the efficient application of force but with the exploitation of potential force'. Strategy itself therefore helped erode the distinction between war and peace, a trend confirmed by the high levels of military expenditure in the Cold War, and by the tendency to engage in proxy wars and guerrilla conflicts below the nuclear threshold.

The meaning of strategy had now changed. Conventional strategy was a strategy of action; it prepared for war and then implemented those preparations. Nuclear strategy was a strategy of dissuasion; it prevented war. Conventional strategy was built up through historical precedent. Nuclear strategy had no real precedents, beyond the dropping of the two atomic bombs on Japan. And so it focused on finding a new methodology, building scenarios and borrowing from mathematics and probability theory. Indeed methodology itself seemed on occasion to be the *raison d'être* of strategic thought. Nuclear strategy abandoned the focus on victory. It was, in the opinion of one French commentator, 'astrategic'.[39] Another Frenchman, General André Beaufre, demonstrated the impasse which strategy had reached. War, he declared, was total, and therefore strategy must be total. That meant that it should be political, economic, diplomatic and military. Military strategy was therefore one arm of strategy.[40] But what then was political strategy? Beaufre did not confront his own oxymoron.[41] Strategy without any adjective was for him both political and military, and therefore was about policy outcomes, not the use of force as the means to achieve them.

None of this was too problematic for the navies of the Cold War. Naval strategists had long seen strategy as operative in peace as well as war. Fleets and bases, even more than armies and fortifications, had to be prepared before a war broke out, and their shape and distribution moulded the strategy to be followed once hostilities began.[42] Those patterns provided their own forms of security in peace as well as in war: for example, they underpinned the notion of *pax Britannica*. But for the classical strategists of land war the notion of strategy in peace was inherently illogical. This had begun to change in the period before the First World War, when the attention given to war plans and peacetime military preparations led to arguments that these activities could properly be considered part of strategy. But the presumption was not that the end was the application of strategy

in peacetime but its better use when war came. For the armies the end remained combat. For the navies the end might turn out not to be war at all.

Armies and their generals lost their way in the Cold War. The discipline of strategy, which defined and validated the art of the commander, the business of general staffs, and the processes of war planning, was no longer theirs – or at least not in the United States or in Britain. Beaufre wrote that 'the word strategy may be used often enough, but the science and art of strategy have become museum pieces along with Frederick the Great's snuffbox and Napoleon's hat'. Strategy, he concluded, 'cannot be a single defined doctrine; it is a method of thought'.[43] Edward Luttwak, writing towards the end of the Cold War, defined strategy as 'the conduct and consequences of human relations in the context of actual or possible armed conflict'.[44]

New words for old

Strategy was appropriated by politicians and diplomats, by academics and think-tank pundits, and it became increasingly distant from the use of the engagement for the purposes of the war. The latter activity was given new titles. Barry Posen distinguished between grand strategy and military doctrine. The former was 'a political-military, means–ends chain, a state's theory about how it can best "cause" security for itself'. The latter was a sub-component of grand strategy and concerned the means used by the military.[45] In the 1980s the American and British militaries responded to this crisis by embracing the operational level of war – sited between grand strategy and tactics. They even invented a spurious genealogy for it. If it had roots, they were Russian. Aleksandr A. Svechin, writing in 1927, placed operational art between tactics and strategy, and defined strategy as 'the art of combining preparations for war and the grouping of operations for achieving the goal set by the war for the armed forces'.[46] However, it proved more convenient for most commentators to locate the evolution of the operational level of war in Germany – perhaps because Germany was now an ally and perhaps because there was an Anglo-American conspiracy to laud Germany's military achievements in the two world wars despite their defeat in both.[47]

Most German generals before 1914 divided war into tactics and strategy, just like generals of every other state. The tasks and problems, which Schlieffen set the German General Staff while its chief between 1891 and 1905, were called *'Taktisch–strategischen Aufgaben'* (tactical-strategic problems), not operational problems. The First World War showed the generals of Germany, like those of every other state, that the conduct of war was not just a matter of strategy in an operational sense, but also involved political, social and economic dimensions. However, the veterans of the supreme command, the *Oberste Heeresleitung*, did not respond to this realisation as the British did: grand strategy figured neither as a phrase nor as a concept in the immediate aftermath of the armistice. Ludendorff entitled his reflections on the war, published in 1922, *Kriegführung und Politik*, 'the conduct of war and policy'. The title was significant on two counts.

First, the waging of war was kept separate from policy, although yoked to it. In 1916–18, the German supreme command under Hindenburg and Ludendorff had established de facto roles in areas of public life that were neither operational nor strictly military, even if they did indeed have implications for the conduct of the war. Ludendorff's

conclusions from this experience were threefold. The first was to stress that operational matters, strategy as it was traditionally understood, were the business of professional soldiers; in many ways this was a reiteration of pre-war demands, and it was reflected in a number of works by former staff officers. The second was to blame the civil administration for not supporting the military as Ludendorff felt it should. The third conclusion was that government needed to develop mechanisms to enable it to resolve the tensions between the conduct of war and policy. For some that pointed to the creation of joint civil and military bodies, as in the Entente powers; for others it was an argument for the restoration of the monarchy; for Ludendorff it was a case for embodying the direction of policy and *Kriegführung* in a single leader, a *Führer*.[48]

The second point evident in Ludendorff's book was how little it said about strategy. Ludendorff had been contemptuous of strategy in 1917–18, and had as a result fought offensives in the west in the first half of 1918 that had succeeded tactically but had failed to deliver strategic outcomes. In 1922, he did no more than repeat the lapidary definition of the elder Moltke, that strategy was a system of expedients. Moltke himself had gone on to say that strategy is 'the transfer of knowledge to practical life . . . the art of acting under the pressure of the most difficult conditions'.[49] Such truisms conveyed little. German military thought in the inter-war period followed suit. Strategy dropped out of currency. In 1936–39, three massive volumes on the military sciences were published in four parts, the first appearing with an imprimatur from the minister of war, Werner von Blomberg. They had no separate entry for strategy, which was subsumed under *Kriegskunst*, or the art of war. What was said about strategy was new only in so far as it stressed that it was no longer simply a matter for the army, but now had to combine all three services. In other respects it remained what it had been before the First World War, a matter of operational direction:

> Thus strategy embraces the entire area of the military conduct of war in its major combinations, especially the manoeuvres (operations) and battles of armies and army components to achieve mutual effects and ultimately the military war aim.

The hierarchy of policy, strategy and tactics also remained intact:

> So strategy makes available to tactics the means for victory and at the same time sets the task, just as it itself derives both from policy.[50]

The relationship between war and politics was treated under a separate heading, *'Politik und Kriegführung'*, and the latter word itself was now taken to mean not just the conduct of war in an operational sense but the combination of political and military factors by the supreme powers.[51] The domain of the army specifically was increasingly described not as strategy but in related terms, *as Militärische* or *Operative Kriegführung*. The achievements of the *Wehrmacht* in 1939–41 conformed to the expectations generated by these guidelines. They were the consequence of applied tactics more than of any overarching theory, and they confirmed – or so it seemed – that strategy was indeed a system of expedients, 'the art of acting under the pressure of the most difficult conditions'. The German army which invaded France in 1940 was doing little more than follow its own nose.[52] But after the

event its victory was bestowed with the title *Blitzkrieg* and became enshrined in doctrine. Germany lost the Second World War in part for precisely that reason, that it made operational thought do duty for strategy, while tactical and operational successes were never given the shape which strategy could have bestowed.

This pedigree to the operational level of war, which is the focus for doctrine in so many Western armies, raises some interesting points. The first is an easy and largely true observation, that the so-called operational level of war is in general terms little different from what generals in 1914 called strategy. The second is that, like those generals, armed forces today are attracted to it because it allows them to appropriate what they see as the acme of their professional competence, separate from the trammels and constraints of political and policymaking direction. However, there is a crucial difference. In 1914, the boundary between strategy and policy, even if contested, was recognised to be an important one, and the relationship was therefore addressed. Today, the operational level of war occupies a politics-free zone. It speaks in a self-regarding vocabulary about manoeuvre, and increasingly 'manoeuvrism', that is almost metaphysical and whose inwardness makes sense only to those initiated in its meanings. What follows, thirdly, is that the operational level of war is a covert way of reintroducing the split between policy and strategy. Yet, of course the operational level of war determines how armed forces plan and prepare in peacetime, and therefore shapes the sort of war they can fight. The American and British armies developed their enthusiasm for the operational level of war in the 1980s, for application in a corps-level battle to be fought against an invading Soviet army in northern Europe. The successes of the 1991 Gulf War created the illusion that it was an approach of universal application. It is now applied in situations, such as peace support operations, in which the profile of politics is much higher than would have been the case in a high-intensity major war. One consequence for the United States military has been the disjunction between the kind of war for which it prepared in 2003 and the war in which its government actually asked it to engage. Thinking about the operational level of war can diverge dangerously from the direction of foreign policy.

Rediscovering strategy

Strategy should of course fill the gap. But it does not, because strategy has not recovered from losing its way in the Cold War. In the 1990s nuclear weapons and nuclear deterrence were deprived of their salience. The strategic vocabulary of the Cold War – mutual vulnerability, bipolar balance, stability, arms control – was no longer relevant. However, nobody wanted to revert to the vocabulary of traditional strategy. Strategic studies have been replaced by security studies. At times they embrace almost everything that affects a nation's foreign and even domestic policy. They require knowledge of regional studies – of culture, religion, diet and language in a possible area of operations; they require knowledge of geography, the environment and economics; they concern themselves with oil supplies, water stocks and commodities; they embrace international law, the laws of war and applied ethics. In short, by being inclusive they end up by being nothing. The conclusion might be that strategy is dead, that it was a creature of its times, that it carried specific connotations for a couple of centuries, but that the world has now moved on, and has concluded that the concept is no longer useful.

That would be a historically illiterate response. Classical strategy was a discipline based on history – based, in other words, on reality not on abstraction. Strategy after 1945 may have been materialist, in the sense that it responded to technological innovation more than it had in the past, and it may have used game theory and probability more than experience and principle. But that was not true of any major strategist writing before 1945. Such men used history for utilitarian and didactic purposes, some, like Liddell Hart, in ways that were blatantly self-serving. Even Clausewitz was more selective in his study of military history than he cared to admit. But he, like Jomini, or like Mahan or Corbett, wrote more history than theory. They all believed that strategy involved principles that had some enduring relevance. They mostly accepted that those principles were not rules to be slavishly followed, but they did believe that principles could give insight. Two obvious conclusions follow. First, history is necessary to put their theories in context. We have, for instance, to approach Clausewitz's discussion of the relationship between war and policy recognising that he was a product of Napoleonic Europe and not of the nuclear age. Secondly, a grasp of strategy traditionally defined is required if we are to appreciate the classical texts on the subject.

Strategy, however, is not just a matter for historians. It concerns us all. Strategy is about war and its conduct, and if we abandon it we surrender the tool that helps us to define war, to shape it and to understand it. Martin van Creveld, John Keegan and Mary Kaldor, among others, have argued that war traditionally defined, that is war between states conducted by armed forces, is obsolescent.[53] In so doing, they have pointed to a fundamental but underappreciated truth, that war has its own primordial nature, independent of its political or social setting.[54] Moreover, the Western powers have unwittingly colluded in a process in which war is once again to be understood in its primitive state. War has been wrenched from its political context. In Hobbesian terms, the state's legitimacy rests in part on its ability to protect its citizens through its monopoly of violence, but the state's right to resort to war in fulfilment of its obligations has been reduced. One reason is that international law has arrogated the decision to go to war, except in cases of national self-defence, to the United Nations. Even states involved in a de facto war do not declare war, so as to avoid breaches of international law. Paradoxically, therefore, international law has deregulated war. The notion that waging war is no longer something that states do is particularly prevalent in America and Europe for three further reasons. First, enemies tend to be portrayed either as non-state actors, or, when they are not, as failed states (the description applied to Afghanistan) or rogue states (that deemed appropriate in the case of Iraq). Either way their political standing is compromised. Secondly, the armies of America, Britain and France are professional bodies, drawn from a narrow sector of the society on whose behalf they are fighting: such armies have become the role models in contemporary defence. But they represent their states more than their nations, their political leaderships more than their peoples. The same could be said of the private military companies, bodies without a formal national identity but on which even states with competent armed forces rely. Thirdly, and the logical consequence of all the preceding points, European states (thanks to 11 September this applies less to the United States) identify war with peacekeeping and peace enforcement. However, they are not the same. Peace support operations make problematic the traditional principles of war, developed for inter-state conflict. The

objects of peacekeeping are frequently not clear, and the operations themselves are under-resourced and driven by short-term goals. On the ground command is divided, rather than united, and forces are dispersed, not concentrated; as a result the operations themselves are in the main indecisive.

War persists, but the state's involvement and interest in it are reduced. The issues raised by war too often seem to be ones not of their conduct and utility but of their limitation. The overwhelming impression is that they are initiated by non-state actors, that they are fought by civilians, and that their principal victims are not soldiers but non-combatants. The reality is of course somewhat different. States do still use war to further their national self-interest. The European members of NATO did so in Kosovo and the United States did so in Iraq. The infrequency of intervention despite the atrocities and humanitarian disasters in sub-Saharan Africa provides counter-factual evidence to support the point. Without perceived self-interest, the Western powers are reluctant to use military force.

The state therefore has an interest in re-appropriating the control and direction of war. That is the purpose of strategy. Strategy is designed to make war useable by the state, so that it can, if need be, use force to fulfil its political objectives. One of the reasons we are unsure what war is is that we are unsure about what strategy is or is not. It is not policy; it is not politics; it is not diplomacy. It exists in relation to all three, but it does not replace them. Widening definitions of strategy may have helped in the Cold War, but that was – ironically – both a potential conflict on a par with the two world wars and an epoch of comparative peace among the great powers. We now live in an era when there is perceived to be a greater readiness on the part of both the United States and the United Kingdom to go to war. Today's wars are not like the two world wars, whose scale sparked notions of grand strategy. Then big ideas helped tackle big problems. But today such concepts, loosely applied, rob the more localised wars that confront the world of scale and definition. Threats are made bigger and less manageable by the use of vocabulary that is imprecise. The 'war on terror' is a case in point. In its understandable shock after 9/11, America maximised the problem, both in terms of the original attack (which could have been treated as a crime, not a war) and in terms of the responses required to deal with the subsequent threat. The United States failed to relate means to aims (in a military sense) and to objectives (in a political sense). It abandoned strategy. It used words like prevention and pre-emption, concepts derived from strategy, but without context. They became not principles of military action but guidelines for foreign policy.

Britain's position is also instructive. Its assertion of the right to pre-emptive action was not first set out in *UK International Priorities* but in the Ministry of Defence's 'New Chapter' to the *Strategic Defence Review*. The Ministry of Defence, not the Foreign Office, was therefore articulating the policy which would guide Britain's decision to use force. One of the reasons why strategy has fallen into a black hole is that the government department most obviously charged with its formulation has expanded its brief into foreign policy, and that in turn is a consequence of widening definitions of war. Britain does not have an identifiable governmental agency responsible for strategy (despite the Foreign Office's apparent but perverse claim that that is its task). When the Falklands War broke out in 1982, Margaret Thatcher, as prime minister, had to improvise a war cabinet, a body that brought together the country's senior political and military heads: it has left no

legacy, any more than has its prototype, the Committee of Imperial Defence, an advisory committee of the full cabinet set up in 1902.

When George Bush gave his London speech in November 2003, one possible challenger to his second term as president was Wesley Clark, who sought (but did not get) the Democrat nomination. Clark's career has been fashioned not by politics but by the army, and it culminated as Supreme Allied Commander Europe in the Kosovo war of 1999. The political and legal problems which that conflict generated undercut his military preparations, leading him to conclude: 'any first year military student could point to the more obvious inconsistencies between our efforts and the requirements posed by the principles of war'. Clark writes and lectures on waging modern war: he uses the word 'strategy' a great deal and he uses it with precision. His military experience is recent, but his refrain sounds familiar, even if old-fashioned: 'Using military force effectively requires departing from the political dynamic and following the so-called "Principles of War" identified by post-Napoleonic military writers a century and a half ago'.[55]

The point is not that generals should go back to what they were doing in the nineteenth century, but that politicians should recognise what it is that generals still do in the twenty-first century – and do best. If strategy has an institutional home in the United States or in the United Kingdom, it is located in the armed services. And yet in the planning of both the wars undertaken by the United States since the 9/11 attacks, those in Afghanistan and Iraq, professional service opinion, from the chairman of the Joint Chiefs of Staff downwards, has often seemed marginal at best and derided at worst. In 1986 the Goldwater-Nichols Act enhanced the authority of the chairman and made him the president's military advisor. This was the relationship played out between Colin Powell and George Bush senior in the first Gulf War in 1990–91. In 2001, the chairman answered less to the president than to the Secretary of Defense, Donald Rumsfeld. Rumsfeld was already at odds with his generals over the 'transformation' of the armed forces, and his subsequent reactions exposed the mismatch between his aspirations and their expectations. In the words of Bob Woodward: 'Eighteen days after September 11, they were developing a response, an action, but not a strategy.' The military 'had geared itself to attack fixed targets,' while the politicians were talking about doing a 'guerrilla war'. The military recognised that the consequence of the latter would be regime change, but the president refused to accept the probable consequences of his own policy, saying 'our military is meant to fight and win war', and denying that US troops could be peacekeepers.[56]

Kabul fell within 40 days. The United States had prevailed in Afghanistan (or so it seemed) without having had to formulate strategy. Action had generated its own results. The rapidity of the success bred more than surprise; it bred its own confidence, a 'can do' mentality which put more premium on taking the initiative than on learning lessons for the formulation of strategy. Planning for Iraq displayed a comparable underappreciation of strategy. Clearly the US armed forces displayed their competence at the operational level of war in March–April 2003. They were also able to recognise the manpower needs of post-conflict Iraq and the requirement to cooperate with nongovernmental organisations. Theoretically they could see the campaign in strategic terms, with a planning cycle that embraced four phases – deterrence and engagement; seizing the initiative; decisive operations; and post-conflict operations. But strategy was

driven out by the wishful thinking of their political masters, convinced that the United States would be welcomed as liberators, and determined that war and peace were opposites, not a continuum. This cast of mind prevented consideration of the war's true costs or the implications of occupation, and the United States found itself without a forum in which the armed forces either could give voice to their view of the principles at stake or be heard if they did.[57]

* * *

Recent commentators have noted with dismay the under-funding both of the State Department in the United States and the Foreign and Commonwealth Office in Britain. They bemoan the readiness to militarise foreign policy rather than to use patient diplomacy. But the fault is not that of the military; it is the responsibility of their political masters.[58] They – not the soldiers – have used the armed forces as their agents in peace as well as in war. The confusion of strategy with policy is a manifestation both of the causes of this 'militarisation' and its consequences. President Bush's speech of November 2003 made clear that he had a policy. Indeed he has courted criticism precisely because it has been so clear and trenchant. But that is not strategy. The challenge for the United States – and for the United Kingdom – was, and is, the link between the policy of its administration and the operational designs of its armed forces. In the ideal model of civil-military relations, the democratic head of state sets out his or her policy, and armed forces coordinate the means to enable its achievement. The reality is that this process – a process called strategy – is iterative, a dialogue where ends also reflect means, and where the result – also called strategy – is a compromise between the ends of policy and the military means available to implement it. The state, and particularly the United States, remains the most powerful agency for the use of force in the world today. Lesser organisations use terror out of comparative weakness, not out of strength. The conflation of words like 'war' and 'terror', and of 'strategy' and 'policy', adds to their leverage because it contributes to the incoherence of the response. Awesome military power requires concepts for the application of force that are robust because they are precise.

Notes

1 See reports in *The Times* and the *Daily Telegraph*, 20 November 2003. What follows was delivered as my inaugural lecture as Professor of the History of War in Oxford on 4 December 2003.
2 CM 6052, December 2003.
3 CM 6041, December 2003.
4 CM 5566, July 2002.
5 Carl von Clausewitz, *On War*, ed. and trans. Michael Howard and Peter Paret (Princeton, NJ: Princeton University Press), p. 177, see also 128, 227.
6 Xenophon and Polybius both used στράάτηγημμάά (*strātegemā*), or stratagem, to cover the art of the general. Xenophon uses στρατηγίίάά (*strategiā*), or strategy, to mean plan in *Anabasis*, book II, chapter ii, 13; but contrast I, vii, 2, where a Persian council of war discussed 'how he [Cyrus] should fight the battle', and II, ii, 6, which speaks of the 'wisdom which a commander should have'. Onasander, Στρατηγικόός (or *The General*) discussed 'the principles of generalship' and 'the art of the general and the wisdom that inheres in the precepts' (Proemium, 3), but used the word 'strategy' in chapter XXXII, 5. I am grateful to Martin West and Brian Campbell for discussing these points with me.
7 Azar Gat, *The Origins of Military Thought from the Enlightenment to Clausewitz* (Oxford: Clarendon Press, 1989), p. 39.

 8 Quoted by J.-P. Charnay, in André Corvisier (ed.), *A Dictionary of Military History and the Art of War*, English edition ed. John Childs (Oxford: Blackwell Reference, 1994), p. 769; see also Gat, *Origins of Military Thought*, p. 42.
 9 Quoted by Charnay in Corvisier, *Dictionary of Military History*, p. 769.
10 Antoine-Henri Jomini, *Summary of the Art of War*, trans. G.H. Mendell and W.P. Craighill (Philadelphia: J.B. Lippincott, 1862), p. 137.
11 Ibid., p. 13.
12 Ibid., p. 69.
13 Gerhard Ritter, *The Sword and the Scepter: The Problem of Militarism in Germany*, 4 vols (London: Allen Lane, 1969–73), vol. I, pp. 187–260.
14 Friedrich von Bernhardi, *On War of To-day*, trans. Karl von Donat, 2 vols (London: Hugh Rees, 1912–13), vol. 2, pp. 187, 194.
15 Jean Colin, *The Transformations of War*, trans. L.H.R. Pope-Hennessy (London: Hugh Rees, 1912), p. 343.
16 Commandant [Henri] Mordacq, *Politique et stratégie dans une démocratie* (Paris: Plon, 1912), pp. 214, 237.
17 Julian Corbett, *Some Principles of Maritime Strategy*, ed. Eric Grove (Annapolis, MD: Brassey's, 1988; 1st ed. London, 1911), p. 10.
18 Ibid., p. 17.
19 Ibid., p. 30.
20 'The Green Pamphlet', printed as an appendix in ibid., p. 308.
21 Jon Tetsuro Sumida, *Inventing Grand Strategy and Teaching Command: The Classic Works of Alfred Thayer Mahan Reconsidered* (Washington DC: Woodrow Wilson Center Press, 1997), p. 27.
22 Raoul Castex, *Théories stratégiques*, 5 vols (Paris: Société d'Editions Géographiques, Maritimes et Coloniales, 1927–33); the quotation is from the revised edition of vol. 1, published in 1937), p. 9.
23 Ibid., vol. 3, p. 115.
24 Cameron Hazlehurst, *Politicians at War, July 1914 to May 1915: A Prologue to the Triumph of Lloyd George* (London: Jonathan Cape, 1971), p. 176.
25 J.F.C. Fuller, *The Reformation of War* (London: Hutchinson, 1923), p. 218.
26 Ibid.; see also Fuller, *The Foundations of the Science of War* (London: Hutchinson, [1926], pp. 105–107.
27 Basil Liddell Hart, *When Britain Goes to War* (London: Faber, 1928), p. 83; see also Liddell Hart, *Thoughts on War* (London: Faber & Faber, 1944), pp. 151–6.
28 J.R.M. Butler, *Grand Strategy*, 2 (London: Cabinet Office, 1957), p. xv.
29 Michael Howard, *Grand Strategy*, 4 (London: Cabinet Office, 1972), p. 1; see also Michael Howard, 'Grand Strategy in the Twentieth Century', *Defence Studies*, vol. 1, 2001, pp. 1–10.
30 Liddell Hart, *When Britain Goes to War*, p. 83.
31 Edward Mead Earle (ed.), *Makers of Modern Strategy: Military Thought from Machiavelli to Hitler* (Princeton: Princeton University Press, 1943), p. viii.
32 Clausewitz, *On War*, p. 606.
33 Herfried Münkler, *Über den Krieg. Stationen der Kriegsgeschichte im Spiegel ihrer theoristchen Reflexionenen* (Weilerswist: Velbrück Wissenschaft, 2002), pp. 91–115; Andreas Herberg-Rothe, *Das Rätsel Clausewitz* (Munich: Wilhelm Fink, 2001), pp. 31–4, 102–24.
34 Carl von Clausewitz, *Historical and Political Writings*, ed. and trans. Peter Paret and Daniel Moran (Princeton: Princeton University Press, 1992), p. 290.
35 Erich Ludendorff, *The Nation in Arms*, trans. A.S. Rappoport (London: Hutchinson, [1935]), pp. 19.
36 Ibid., p. 22.
37 Ibid., p. 23.
38 Münkler, *Über den Krieg*, p. 145.
39 Eric de la Maisonneuve, *Incitation à la réflexion stratégique* (Paris: Ed. Economica, 1998), p. 6.
40 André Beaufre, *An Introduction to Strategy* (London: Faber, 1965), pp. 14, 23.
41 Interestingly Bernhardi explicitly used the phrase 'political strategy' in *War of To-day*, vol. 2, p. 454, but only once and without defining it.
42 Castex, *Théories stratégiques*, vol. 1, pp. 17–18.
43 Beaufre, *Introduction to Strategy*, pp. 11, 13.
44 Edward Luttwak, *Strategy: The Logic of War and Peace* (Cambridge, MA: Belknap, 1987), p. 4.
45 Barry Posen, *The Sources of Military Doctrine: France, Britain, and Germany between the World Wars* (Ithaca, NY: Cornell University Press, 1984), pp. 13, 220.

46 Aleksandr A. Svechin, *Strategy*, ed. Kent Lee (Minneapolis, MN: East View, 1992), p. 69.

47 On the Russian element, see Richard Simpkin, *Race to the Swift: Thoughts on Twenty-first Century Warfare* (London: Brassey's, 1985), pp. 37–53, and Shimon Naveh, *In Pursuit of Military Excellence: The Evolution of Operational Theory* (London: Frank Cass, 1997), pp.164–208. For a comparison, consider the German focus of the essays in Richard D. Hooker, Jr (ed.), *Maneuver warfare* (Novato, CA: Presidio, 1993).

48 Erich Ludendorff, *Kriegführung und Politik* (Berlin: E.S. Mittler, 1922), pp. 320–42; see also Otto von Moser, *Ernsthafte Plaudereien über den Weltkrieg* (Stuttgart: Belser, 1925), pp. 6–14; ein Generalstäbler, *Kritik des Weltkrieges. Das Erbe Moltkes und Schlieffens im grossen Kriege* (Leipzig: K.F. Koehler, 1920).

49 Daniel J. Hughes (ed.), *Moltke on the Art of War: Selected Writings* (Novato, CA: Presidio, 1993), p. 47.

50 Hermann Franke (ed.), *Handbuch der neuzeitlichen Wehrwissenschaften*, 3 vols in 4 (Berlin: Grenter, 1936–39), vol. 1, pp. 181–2; also p. 195.

51 Ibid., pp. 175, 549–53.

52 See, above all, Karl-Heinz Frieser, *Blitzkrieg-Legende. Der Westfeldzug 1940* (Munich: Oldenbourg Verlag 1995).

53 Martin van Creveld, *On Future War* (London: Brassey's, 1991; published in the US as *The Transformation of War*); John Keegan, *A History of Warfare* (London: Hutchinson, 1993); Mary Kaldor, *New and Old Wars* (London: Polity, 1999).

54 Stephen Launay, *La guerre sans la guerre: essai sur une querelle occidentale* (Paris: Descartes, 2003), p. 334.

55 Wesley Clark, *Waging Modern War: Bosnia, Kosovo and the Future of Combat* (Oxford: Perseus, 2001), p. 427.

56 Bob Woodward, *Bush at War* (New York: Simon & Schuster, 2002), pp. 174–6, 192; see also pp. 42–44, 84, 99, 128–9, 227, 245–6; Dana Priest, *The Mission: waging war and keeping peace with America's military* (New York: W.W. Norton, 2003), pp. 21–4, 34, 37.

57 James Fallows, 'Blind into Baghdad', *Atlantic Monthly*, January/February 2004, pp. 53–74; Anthony H. Cordesman, *The Iraq War: Strategy, Tactics and Military Lessons* (Washington DC: Center for Strategic and International Studies, 2003), pp. 153–71, 496–509. I am grateful for the comments on the last section of those who heard me speak at the Olin Institute of Strategic Studies, at Harvard, and at the Triangle Institute for Security Studies, North Carolina, in April 2005, and especially to Stephen Rosen, Peter Feaver, Richard Kohn and Jacqueline Newmyer Deal. They forced me to sharpen my argument, even if they do not necessarily agree with it.

58 Priest, *The Mission*, pp. 11–19.

Index