5

On Strategy, II: The RMA Connection

How does strategy 'work'? This chapter marries RMA theory to the theory of strategy. Our intention is to shape a methodology appropriate for the focused comparisons undertaken as the case studies in Chapters 6–8. The discussion here proceeds from explanation of RMA phenomena as strategic behaviour, to present the essential elements of a theory of strategy. That theory should make sense of events claimed as RMAs, whether or not one is enamoured either of the RMA concept in general or of its application to a particular historical case. For example, there is no question but that the belligerents in the Great War behaved strategically in 1917–18. Whether or not they conceived of and implemented an RMA is another matter. Although the RMA concept is very much on stage in this chapter and those which follow, my principal focus and toolkit of enquiry is the structure and dynamics of strategic behaviour, not RMA theory.

If chaos frequently, though far from invariably, is confounded by strategy—the argument in Chapter 4—how is that accomplished? The RMA practitioner develops and possibly employs the military instrument that in the hands of the strategist delivers strategic performance. US nuclear-armed forces in the Cold War, for example, expressed both an RMA (perhaps more than one RMA) and the strategic behaviour of a superpower. Just as there is much more to strategy and war than RMAs, even in periods when RMAs allegedly flourished, so also the RMA hypothesis cannot be understood sensibly outside the broad framework of the theory of strategy and war.[1] To understand RMA, certainly to develop RMA theory, first one must comprehend strategy. Such comprehension is an absolute requirement, not an optional extra. If an RMA does not work strategically, it simply does not work.

Previous discussion has explained that although strategy is always complex, it is not always nonlinear or chaotic. Strategic matters great and small can confound the expectations of chaos theory. With regard to great strategic matters, the course and outcome of a struggle is rarely even remotely traceable either to pure chance or to some initially only marginal advantage or disadvantage.[2] Belligerent polities make much of their own luck. Otto von Bismarck isolated France diplomatically in 1870, a feat not repeated by his successors in 1914. French military performance initially was scarcely more impressive in 1914 than it had been in 1870,[3] but there were systematic reasons why Alfred von Schlieffen's probably

largely mythical 'Plan' was unlikely to secure a repeat of Helmuth von Moltke's battlefield triumphs.[4] For apparently smaller strategic matters also, chaos does not regularly rule in strategy and war. Activity on some of strategy's dimensions, and the relations between them, lend themselves to calculation. For example, fuel, distance, and time; troops and food and water; indeed the whole vital realm of logistics warrants its usual definition as the *science* of supply and movement.[5] Because strategic performance is the product of a complex process involving many incalculables (such as discipline, morale, skill at all levels of military behaviour, lucky choices), it does not follow that calculation in strategy is either impossible or unimportant. From the Second World War to the present day, operations research has demonstrated that to many clearly defined military, not strategic, problems there are superior quantifiable answers. The prudent strategist accepts gratefully all the quantified answers that can be developed to problems which lend themselves to such analysis.[6]

Many RMA theorists have grasped at least a significant part of the nature of strategy. Indeed, virtually all definitions of RMA, whatever their other limitations, express recognition of synergy. It is the nature of strategy to reflect practical operation of the motto that Alexander *Dumas père* declared authoritative for his king's musketeers: 'All for one, and one for all!' Theorists associated with Andrew W.Marshall's ONA consistently have explained the RMA concept as a gestalt (synergy, or synergistic whole).[7] Andrew F.Krepinevich insisted that '[m]ilitary revolutions comprise four elements: technological change, systems development, operational innovation, and organizational adaptation.'[8] From the same intellectual stable, ONA's Associate Director Thomas J.Welch, informs us that '[f]or the Office of Net Assessments *[sic]*, a revolution in military affairs occurs when technological change makes possible material, which *when combined with organisational and operational change,* result in a transformation in the conduct of warfare.'[9]

In common with strategy, RMA as *gestalt* must be viewed as a complex open system whose several, even many, parts always function holistically. Technology, or military organisation, or operational ideas, cannot perform in isolation. Each acts upon and through the others, and they all act together in the currency of more (or less) military effectiveness. In its turn, that military effectiveness translates into more (or less) strategic effectiveness. Hence the relevance of Dumas *père*'s 'all for one, and one for all'. Clausewitz writes that '[i]n war 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.'[10]

So much of this analysis is inherently contestable that it is important not to miss such a bedrock of reliable knowledge as is available to provide a solid foundation for theory. The structure and basic functioning of strategy yields just such bedrock. Vital questions need to be posed and answered

concerning the relations possible among strategy's different aspects, but the identity of those aspects and the nature of their interconnections fortunately are not contentious. Alas, the truly difficult task remains. The securing of a conceptual grip upon the nature, structure, and functioning of strategy is only akin to establishing base camp for an expedition up a high mountain. This conceptual base camp literally is essential, in that if it is wrongly placed and poorly equipped and provisioned, the expedition must fail. However, this base camp of explanation of the nature and working of strategy is strictly an enabler for the serious assault on some of strategic history's elusive peaks in the chapters that follow.

RMA AS STRATEGIC BEHAVIOUR

Strategy has many facets, each of which, though distinguishable, is penetrated by the practical implications of the others. Moreover, the many-faceted vehicle of strategy moves as a single entity, regardless of the complexity, even the chaotically performing complexity, of its structure and functioning. It is a minor challenge to understand the nature and working of strategy. It is a major challenge to exploit that understanding in order to explain how, why, and with what plausible consequences actual historical episodes occurred as they did. Clausewitz warns that although war has a permanent, if complex, nature, it 'is more than a true chameleon that slightly adapts its characteristics to the given case'.[11] Every conflict is different. War's enduring nature shows unique characteristics from historical case to case.

Of what does strategy consist? What are its facets, aspects, elements, or dimensions (these terms are synonymous)? How do the dimensions of strategy, individually and synergistically, relate to the theory and practice of RMA? Answers to these questions comprise the core of the methodology applied in Chapters 6–8. The paragraphs immediately below expose the reasoning that is the basis for that methodology.

Every historical passage of strategy is unique. But every strategic episode is also the same in its structure and functioning. The medical classic, *Gray's Anatomy*, explains our common human corporeality, an explanation entirely consistent with the fact of apparently infinite human individuality. Modern research in physical anthropology reveals that even the long-popular proposition that humankind comprises several distinctive races is scientifically untenable. There is a greater range of genetic variation within so-called races than there is between them. By analogy, we should beware lest scholarly attention to the apparent distinctiveness of some kinds of wars or other forms of strategic behaviour obscure the underlying unity of all strategic phenomena.

Strategy's anatomy can be variously dissected, depending upon the purpose of the exercise. On the principle of 'horses for courses', this analysis prefers an unusually granulated approach. The case studies in the next three chapters are developed by a methodological toolkit which favours no fewer than 17 dimensions of strategy, as contrasted with Carl von Clausewitz's five, and Michael Howard's four (see below).[12]

The dimensions of strategy are also the dimensions of an RMA. The conduct of an RMA, pre-planned or not, is an exercise in strategy; it is strategic behaviour. It is correct to argue in company with Krepinevich and many others, that an RMA entails 'the four elements: technological change, systems development, operational innovation, and organizational adaptation'. However, it is no less true to argue that the practice of RMA involves action concerning all of strategy's dimensions. RMA has political meaning; it may use or challenge cultural preferences; it must cope with intelligent and unique adversaries; and it must occur over time—to cite only four of the dimensions.

When securely nested in a holistic and persuasive theory of strategy writ large, RMA theory is protected against the inadvertent ascription of out-of-context magical qualities. The point is that for an RMA to work, it has to, indeed can only, work as strategy. If it is unsound to tie strategic excellence to an allegedly new and master technology or wonder weapon, to a genius in high command, or to some deeply cunning tactical or operational idea—in all but isolation—so must it be unsound to harbour great expectations of RMAs propelled thus narrowly.[13]

Clausewitz wisely warns us against attempting 'to develop our understanding of strategy by analysing these factors [his five elements of strategy, see below] in isolation, since they are usually interconnected in each military action in manifold and intricate ways'.[14] That admonition is repeated most usefully by Michael I.Handel when he notes, in commentary upon Clausewitz's holism, that in war 'unlike in the natural sciences, different variables or factors cannot be isolated and studied independently'.[15] The truth in that argument translates as the point that all forms and characters of military behaviour register on the scale of military effectiveness, which, in its turn, scores on the scale of strategic effectiveness (even if in a nonlinear way). Nonetheless, Clausewitz and Handel need to be read critically. Despite the fact that there is a necessary unity to strategy and war, and even though 'the parts [of war] can only be studied in the context of the whole, as a *"gestalt"* (or synergy)',[16] the 'parts'—elements or dimensions—can and must be studied. Without affronting the holistic nature of strategy (and war), and without denying the highly dynamic synergies that operate in its complex structure, the leading edge of my analysis is precisely the approach concerning which Clausewitz was so emphatic in his warning.

Every historical RMA comprises identical categories of ingredients; these are the standard dimensions of strategy. But each RMA is keyed to novelty on one or several in particular among those dimensions. For example, the Napoleonic RMA was triggered by changes in French society, by the political meaning of those changes, and then by the military implications of such changes, when exploited by a commander with extraordinary gifts.[17] That RMA obliged France's enemies to respond as best they were able with a focus on those dimensions on which they could improve, and which offered a fair prospect of strategic success. The patterns of response comprised a mixture of symmetrical and asymmetrical behaviour, both generically on the adversary dimension of strategy, and in detail on the political, geographical, economic, temporal, and so forth dimensions. Although each of strategy's dimensions influences every other one, arguably implying a chaotic complexity overall, still it is sensible to seek relative excellence where best one can so as to structure conflict with favourable terms and conditions.

A MATTER OF DIMENSION

Clausewitz recommends five broad 'elements of strategy': 'moral, physical, mathematical, geographical, and statistical'.

> The first type ['moral'] covers everything that is created by intellectual and psychological qualities and influences; the second ['physical'] consists of the size of the armed forces, their composition, armament and so forth; the third ['mathematical'] includes the angle of lines of operation, the convergent and divergent movements wherever geometry enters into their calculation; the fourth ['geographical'] comprises the influence of terrain, such as commanding positions, mountains, rivers, woods, and roads; and finally, the fifth [statistical] covers support and maintenance.[18]

It would be a gross understatement to say that Clausewitz's approach, with its five broad elements of strategy, is both insightful and useful. That granted, and for all the elegance in its apparent simplicity, in my view it is too parsimonious to be useful enough for this enquiry. That judgement holds even if one superimposes upon the five elements his 'remarkable trinity' of passion, chance, and reason, which he associated respectively primarily with 'the people', 'the commander and his army', and the

'government'.[19] That trinity approximates identification of social, military, and political dimensions of war.

As an editor and translator of *On War*, Michael Howard applied a variant of Clausewitz's structural analysis in his seminal 1979 article, 'The Forgotten Dimensions of Strategy'. Howard argued persuasively that strategy's logistical, operational, and social dimensions had been seriously neglected by recent strategists in favour of the technological. It is no criticism of Howard's essay to say that his argument, though generally inspirational and exceptionally relevant to this enquiry in its indictment of an undue technicity in modern and contemporary strategic thinking, does not provide an analytical framework capable of bearing the traffic of the historical case studies in Chapters 6–8. As with Clausewitz, so for Howard, an explicitly more inclusive theoretical framework is necessary.

The 'third cut' at analysing strategy through a structural-functional lens, my tri-clustered 17 dimensions as listed in Figure 5.1, is of course the framework applied in my case studies. Admittedly, structural-functional intention can appear to be obscured by such naked itemisation. I believe that a full formal 'wiring diagram' for my approach to the analysis of strategy, though in principle feasible, would not be helpful (which is why Figure 5.1 is strictly illustrative). I am determined to avoid a characteristic error committed by many scholars of decision-making. Specifically, their 'wiring diagrams' of the (somewhat idealised) decision-making process tend simultaneously to be trivial because they reveal the obvious, and overcomplicated because of the mind-boggling complexity they demonstrate. Paradoxically, those diagrams are not complicated enough because the real world of decision-making contains nexuses and feed-back loops on a scale and of such a character as to warrant description as chaotic by any definition. As earlier discussion demonstrated, the periodicity and even the life-cycle of RMA can be shown by simple graphics. Such is not the case for the structure and working of strategy.

Strategy is both static and dynamic. It is an eternal phenomenon with permanent dimensions, yet also it is a process that unfolds over time. Time must be recognised explicitly as a strategic dimension.[20] Six points are vital for understanding strategy's structure and dynamics.

First, strategy's dimensions are analytically distinctive, but in practice each affects, or certainly could affect, the performance of the others synergistically for net positive or negative results. For example, a tactically peerless but short-range Wehrmacht, supreme in combat effectiveness, could no longer deliver campaign success when policy required it to perform in Russia in geography whose terrain was too extensive as well as a climate too extreme for its logistical infrastructure to be effective.[21] Several crucial disconnects proved fatal. The Germans simultaneously prosecuted their war in the east with too few troops to cope with the enemy in his geography and too many to be effectively supportable logistically. The military effectiveness of the Wehrmacht, measured as its combat power, had meaning

only with reference to an historically specific time, place and adversary (inter alia).[22] In addition, distinctive though the dimensions are in principle, in reality there are many fuzzy boundaries between them. I choose to distinguish between people, society, and culture, for example, but the fences around these categories are low and contain many openings. Similarly, economics and logistics can be understood to merge with military administration, while the asserted dimensions of politics, organisation, and command assuredly overlap. This fuzziness is not a problem; it is just the way things are and acceptance of it is a price worth paying for the flexibility granted by recognition of many, rather than fewer, items.

Figure 5.1: The Elements/Dimensions of Strategy: Three Cuts

First cut:	***Carl von Clausewitz (1832)***	
	1. Moral	4. Geographical
	2. Physical	5. Statistical
	3. Mathematical	
	(Also: passion, chance, reason; or social, military, political)	
Second cut:	***Michael Howard (1979)***	
	1. Logistical	3. Social
	2. Operational	4. Technological
Third cut:	***Colin S.Gray (2002)***	

	(a) People and politics	
	1. People	4. Politics
	2. Society	5. Ethics
	3. Culture	
	(b) Preparation for war	
	6. Economics and logistics	9. Information and intelligence
	7. Organisation (defence planning)	10. Theory and doctrine
	8. Military administration (recruitment, training, procurement)	11. Technology
	(c) War proper	
	12. Military operations (fighting performance)	14. Geography
		15.Friction and chance
	13. Command (polotical and military)	16. Adversary
		17. Time

Second, there is no hierarchy among the dimensions of strategy. Normatively one may argue for ethics, or people, or politics, but in practice there can be no rank order, at least not with reference to strategic effectiveness. Whether or not strategy should be ruled by moral or political values, the necessary strategic performance can be enabled or undone by advantage or disadvantage on any of the

17 dimensions. Several of the dimensions appear to stand out as extraordinary sources in the shaping of strategic behaviour. For example, people, the human element, in a key sense have to be the fundamental engine driving the strategic theme in history. That human element, though widely variable in performance, offers an unchanging range of characteristic patterns in behaviour. For another example, time is the one dimension that literally cannot be corrected: if it has gone, it has gone. Commanders can be changed, additional forces can be raised, equipped, and trained, but lost time is exactly that. Many categories among my preferred dimensions (such as politics, society, ethics, geography, military operations, technology, and the adversary) all but invite special pleading on their behalf.

Viewing strategy, and war, with Clausewitz as a gestalt, graphical representation of its structure must demonstrate an absence of hierarchy and an all but impossibly complex network of connections. Quite literally, in the world of strategy everything relates to everything else. Figure 5.2 offers a simplified description of the structure and working of strategy.

Commandant Jean Colin had the matter right when he wrote in 1912:

> There is no hierarchy among the elements of war; one cannot pretend that one is more important than another. One day Napoleon said, ‘Victory is to the big battalions’; the next day he declared that ‘in an army the men don’t count’, that ‘one man is everything’. Genius triumphed over numbers at Dresden and succumbed at Leipzig.[23]

The claim that there is no hierarchy among strategy’s dimensions is not a pedantic scholarly point. Instead it penetrates to the heart of the analysis required in the chapters below. A sustainable argument for such a hierarchy could amount to the thesis that there is one, perhaps several, dimensions in which relative weakness may be beyond compensation from elsewhere. The obverse argument, for effective functional equality among dimensions for overall performance, means that in principle compensation could be found for particular weaknesses. In other words, poor performance on any dimension has the potential to wreck the entire strategic enterprise.

Third, the second point, which argues against hierarchy, is true because strategy is a whole, a gestalt, comprising many inalienable elements. No dimension can be discarded for reason of its inconvenience. For example, strategy cannot be conducted ‘beyond geography’,[24] or in the absence of a technological story, or by people bereft of strategic culture. Every dimension is present with, is integral to, strategy, whether one likes it or not and no matter how one elects to slice the strategy pie into constituent parts.

Fourth, because every episode in strategic history is unique, the historical reference for each dimension must always be locally specific and to some degree variable (e.g. even the geography of a

conflict may vary as campaigns ebb and flow). Although there can be no all-case ordering of rank among strategy's dimensions, there should be patterns in relative importance specific to particular episodes of conflict. Albeit subject to change over time, belligerents will show more or less persisting patterns of relative strength and relative weakness across the dimensions. For example, in the Napoleonic Wars, Britain's strategic performance benefited from economic strength, a typically sound enough foreign policy, a permissive geography, unmatchable (at least, difficult to match) naval strength, and eventually exceptional battlefield leadership at the tactical level.[25]

Fifth, strategy is a synergistic, sometimes even a chaotically nonlinear, enterprise wherein strength or weakness on any dimension can influence the strength or weakness of other dimensions. To illustrate: an insular national geography is a source of strength if one enjoys control of the sea. But if the national geopolitical situation is one combining insularity with maritime weakness, then the sea is likely to play geostrategically as a broad highway for invasion.[26] More contentiously, modern history provides possible examples of excellent, at least competent, fighting armies betrayed by incompetent policy-makers and higher military commanders on behalf of ethically enervating causes.

The German Army in the Second World War may fit this category. To identify German political, strategic, and operational incompetence is not a hard claim to sustain. Enervation caused by ethical weakness is more debatable. Although Nazi ideology had a dire effect upon the critical structure of Germany's war(s), and hence upon its prospects for victory, on the other side of the equation that ideology almost certainly enhanced the average potency of German fighting power. Soldiers have to be led as well as commanded, and leadership is all about inspiration and motivation. The cult of the *Führer* and its attendant racial and national ideology certainly helped many young Germans to be better warriors. Although historians try to study this topic in a scholarly way, we are still too close to the Second World War for scholarship on the influence of Nazism to be untainted by unhelpful attitudes.[27]

The case of American performance in Vietnam is especially complex, because it embraces generally incompetent, or worse, political and higher military leadership and command,[28] good enough tactical skills, too little sharp-end fighting power on the ground, what many considered to be a noble political cause, and a local ally seriously reluctant, if not unable, to conduct systemic reform. This discussion is not interested in the US war in Vietnam per se, only in establishing the principle that each dimension of strategy in a conflict influences every other one. The policy that governed the conduct of the war denied US soldiers a fair prospect of success, while the operational art practised in the field by the US Army rendered an already exceedingly difficult mission as close to impossible as makes no difference.[29]

Sixth, contrary to the message from some of the more distant shores of chaos theory, strategy's dimensions can be manipulated purposefully in the quest for advantage and the struggle against disadvantage. Such purposeful strategic manipulation is entirely normal; indeed it is business as usual for strategically competitive polities. For example, a belligerent that knows itself to be tactically disadvantaged could in principle seek compensation through excellence at the operational level of war: that is very much how the Red Army defeated Hitler's Östheer in 1942–45.[30] Such compensation will not always be possible. For example, arguably the US mission in South Vietnam in the 1960s and 1970s was so disadvantaged on that conflict's political dimension, that no measure of excellence in economic strength, in technology, or even in tactical combat effectiveness, could compensate. It is worth noting that weakness-strength vis-à-vis each dimension of strategy is a scale likely to register historical data on a bell-shaped curve. By that I mean that, for example, while a few military commanders are heroically incompetent, and a few warrant the label of genius, most occupy the bulge of the curve as being average and good enough, ceteris paribus. By and large one needs only to perform well enough on each dimension. Given the pervasiveness of friction and chance in strategic affairs, an enemy is more likely to be overcome by the consequences of his own errors than by purposeful brilliance on our part. Strategic performance inherently is a relational variable. One does not have to win elegantly: one just has to perform better on the day than does the enemy.

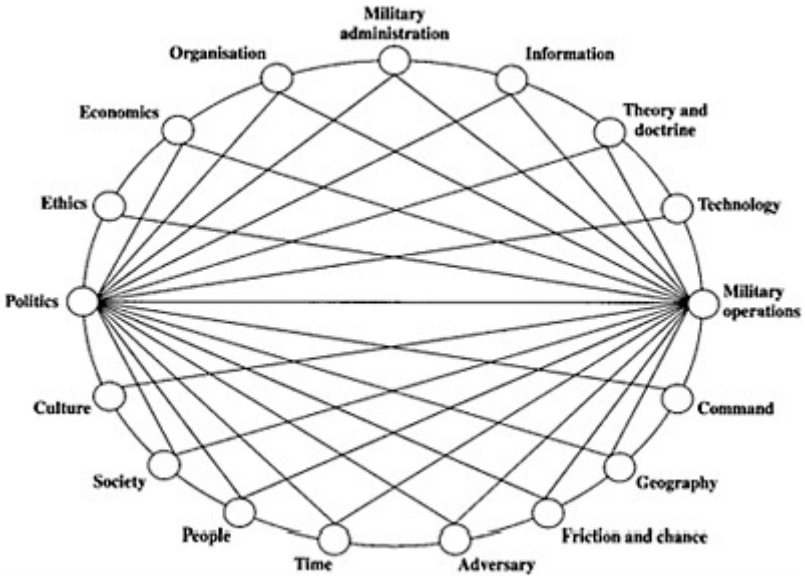

Figure 5.2: The 17 Dimensions of Strategy

The 17 dimensions are displayed non-hierarchically.

Each dimension is always 'in play' and can influence every other dimension.

In this figure I have chosen simply to show the connections to and from two dimensions only, politics and military operations. Display of the nexuses for every dimension would result in a visually impracticable graphic.

This section concludes with the briefest useful description of the focus of each of my preferred dimensions. As a general rule the categories are close to self-explanatory. However, it is well to be certain that every item in the toolkit of theory is properly identified formally.

1. *People* refers to the human face of strategy. There is a human face to all of strategy's dimensions. Strategy is decided upon and executed at every level of performance by real people who have all the strengths and weaknesses-physical, emotional, psychological—that people are wont to exhibit. Individuals matter in their individuality, and they can matter profoundly. At the sharp end, in military operations, strategy is done tactically by actual people performing as warriors, reluctantly or otherwise (not by generic, abstract 'armed forces').

2.*Society* means the social collective and the many ties of community which bind individuals as well as the processes that give them a sense of cultural identity. To date, sociology and social anthropology have not been well enough represented among the disciplines contributing to modern strategic studies.[31]

3. *Culture* refers to the ideals, the documents and other artefacts, and to the habits of behaviour (styles) characteristic of particular communities.[32]

4. *Politics* means the purpose(s) for which strategy is designed and executed. Also it refers to the consequences of military behaviour.[33] Politics can refer both to policy and the process of contention that produces policy (i.e. the policy process, writ large). This bifocality permeates Clausewitz's use of *Politik*.

5. *Ethics* encompasses the whole range of moral issues relevant, or believed by some to be relevant, to strategic behaviour.

6. *Economics and logistics* brackets the economic resources mobilisable for strategic purposes and the assets of supply and movement which comprise the vital enabling infrastructure for all military activities.

7. *Organisation* for the making of strategy and the direction and higher conduct of war refers to the structure and process of policymaking and of defence and force planning (including war planning). Plainly, this dimension shades into politics above, and military administration, command, logistics, and military operations below. The history of the twentieth century showed unmistakably the distinguishable importance of the quality of organisation for strategy.[34] The bridge that is strategy is very much made by the kind of structure and process represented by this dimension.

8. *Military administration* is by and large what Clausewitz means by 'merely preparations for war'.[35] This category refers to the recruitment, organisation, training, and equipment of the armed forces.[36]

9. *Information and intelligence* encompasses all aspects of information relevant to strategic performance. This dimension includes the dynamic states of knowledge— certainly the variable data and information—enjoyed by actual and potential belligerents. In addition, this category embraces all of the activities implied by the term 'intelligence'.

10. *Theory and doctrine* are the ideas current, including those officially authoritative, which purport both to explain strategic phenomena (theory) and to provide explicit guidance for behaviour (doctrine).

11. *Technology* refers to the quality of science and engineering expressed both in the machines that serve as weapons systems and in those that support such systems. To avoid apparent pedantry, from time to time technology will be employed analytically as shorthand for weapon systems, but only in contexts where that meaning is unambiguous.

12. *Military operations* covers all aspects of military performance in the field (or battlespace)[37] against the enemy. By analogy, a play may have an outstanding cast, a superlative script, an inspiring director, and an elegant theatrical venue. But the question remains, how well will the play be performed on the night? This dimension focuses upon the actual tactical doing of strategy by forces in action or threatening action. There is an obvious sense in which military operational performance is entirely a variable dependent upon the other dimensions of strategy. However, while the military effectiveness generated by strategy's elements can only be instrumental for strategic effectiveness on behalf of policy, that effectiveness is tied in to complex feedback loops. The pertinent values—of relative advantage and disadvantage—for strategy's dimensions are not simply the linear and perhaps nonlinear producers of military operational outcomes. By positive or negative feedback from the course of battle, those dimensional values change with events. For example, the geographical terms of conflict can change as battlefield success alters each side's geographical position. By conquering France and the Low Countries in May-June 1940, Germany advanced its air power and sea power—as well as its land power-to the Channel and Atlantic coasts. Clausewitz risks overstating the most essential of relevant truths when he insists that 'Combat is the only effective force in war; its aim is to destroy the enemy's forces as a means to a further end.'[38] It would be difficult to overemphasise the significance of his subsequent elaboration that 'If a decision by fighting is the basis of all plans and operations, it follows that the enemy *can frustrate everything through a successful battle*.'[39]

13. *Command* refers to the variable quality of performance by political and military leaders both as leaders and as commanders.[40] Obviously, this performance is tied closely to politics/policy and to organisation for strategy-making and execution, but still it is usefully distinguishable.

14. *Geography* is the playing field on which all strategic behaviour is conducted. It both shapes armed forces which must operate in particular physical regimes (land, sea, air, space, electromagnetic

spectrum), it defines the belligerents,[41] and more often than not it is the stake in a conflict. Contrary to the argument of some unduly postmodern theorists of cyberwar, nothing occurs beyond geography.[42] Geography truly is inescapable.

15. *Friction and chance* conflate two themes from Clausewitz. Friction, both general and generic to the conduct of war (and defence preparation, one should add), as well as specific to unique situations, occurs in a context of uncertainty.[43] Chance embraces the accidents of bad luck and the opportunities for creative behaviour opened by good luck, neither of which could be anticipated in detail. Although accidents do happen, many such events are preventable, and are prevented, by prudent strategic practice. For example, it is bad luck if a staff officer with campaign plans is captured by the enemy. However, although such a risk cannot be reduced to zero, elementary precautionary behaviour can greatly reduce this hazard.[44]

16. *Adversary* points to the quintessentially relational nature of strategy. Strategy is the intelligent bridge between means and ends which invariably is constructed in the context of a foe with an independent, albeit interacting, will who is out to thwart you. All references to strategy 'working' mean working against an adversary motivated, and in principle able, to deny you strategic success. Just as military action makes strategic sense only with reference to its political consequences, so strategic performance has to mean influence secured, or not, upon a foe. Even when strategy-making lacks for a dominant enemy, and instead is addressed only 'to whom it may concern', still it has to be conceived and planned with reference to a foe, albeit a generic one. Recall Clausewitz's telling metaphors. 'War is nothing but a duel on a larger scale. Countless duels go to make up war, but a picture of it as a whole can be formed by imagining a pair of wrestlers. Each tries through physical force to compel the other to do his will.'[45]

17. *Time* states an obvious constraint upon all strategic behaviour. In common with geography, and indeed with our (in)human nature, time is inescapable. However, unlike geography and human nature, time is rigidly unforgiving. In the apt words of Napoleon: 'Strategy is the art of making use of time and space. I am less chary of the latter than of the former; space we can recover, time never'; and '[t]ime is the great element between weight and force.'[46]

THEORY AND PRACTICE

Although theory and historical practice, explanation and historical evidence, must conduct a constant dialogue, theirs cannot be a partnership of equals. The facts of history may well be in dispute, while their

meaning certainly will be, but nonetheless as potential evidence they are sovereign over ideas and methods. Chapters 1–5 of this book approximate what Clausewitz meant by ‘preparations for war’: Chapters 6–8 correspond to his meaning of ‘war proper’. Strategy inherently has relational meaning as signified by its adversarial dimension. Similarly, theory in social science dangles senselessly in a vacuum if its authority is held to derive only from itself. While theory can be judged for its quality as theory, much as prose can be assayed for literary merit, both are mere verbiage if they do not say intelligent things. Methodologically elegant theory underconnected to evidence is akin to clever decoration in relation to art. Ken Booth made a cognate point when he wrote: ‘Strategic studies divorced from area studies is largely thinking in a void.’[47] The test of the speculative theory in this text is its utility for plausible interpretation of the historical events presented in the next three chapters.

The tools of theory developed here are necessary because the alleged historical facts of RMA are anything but self-revealing, let alone self-revealing into orderly categories neatly interconnected for our enlightenment. This is not to say, however, that we are likely to be short of historical information. The case studies of RMA developed below present only modest problems of elusive information. The challenge rather is to interpret the information for some pattern in meaning, in this context as evidence of RMA, of how RMAs work, and of what that working suggests for the better comprehension of the dynamics of strategic performance.

I have joined the small bandwagon of social scientists who have borrowed the ideas of chaos theory from the mathematical and natural sciences. However, my borrowing has not been uncritical. To claim that strategy is complex, sometimes nonlinear, and prone to be chaotic, is hardly a bold assertion. The key issue is a matter of judgement. Is strategy *so* complex, *so* nonlinear, and *so* chaotic, that purposeful strategic behaviour is impracticable? That is the question that really counts. My answer is that strategic behaviour generally is possible, even though the true whole structure and dynamics of strategy are literally beyond anyone’s comprehension. Should readers doubt this claim, they might care to reflect upon the network exposed only in highly simplified form in Figure 5.2. When policy-makers flash a green light and military leaders turn the key for military (ultimately for strategic) performance, the course and outcome of subsequent events are not entirely random. To be sure, strategic prediction frequently is shown to be vain. Nonetheless, strategy’s often nonlinear working does not necessarily equate to unpredictability and we should not confuse either apparent or real disproportion between input and output with a consequentially chaotic opacity. For example, the age-old principle of ‘economy of force’, and its expression in the modern theory and practice of special operations, points to hugely useful and predictable intended chaotic effect. The core rationale for special operations forces is the promise of a massively favourable unequal military and strategic return from a relatively small investment of

resources.[48] When in 1941 Lieutenant David Stirling of the Scots Guards suggested to General Sir Claude Auchinleck that with 66 men he could destroy most of the Luftwaffe in North Africa on the ground, he provided a glorious illustration of a vision of purposefully chaotic behaviour. That is to say, the raids promised a great disproportion between investment and return (i.e. they exemplify nonlinearity) and, as early failures proved, they were crucially sensitive to the details of initial conditions (i.e. they were chaotic).

Chaos in its everyday non-specialist sense can be confounded by purposeful strategic behaviour. That argument does, however, have only limited domain. Strategic history displays chaotic features in all senses. Because of what is both not known and is literally unknowable in strategy, a flight to the facts is not feasible as a comprehensive aid for the practical strategist. General strategic education in a superior theory of war, for the leading example as provided by Clausewitz, has to compensate for limitations in information and knowledge. Historical detail must be unique, but the practising strategist can cope with, indeed can employ, 'chaos', by understanding, for example, that 'warfare is the way of deception',[49] and that 'the best strategy is always *to be very strong;* first in general, and then at the decisive spof.[50]

Lest the argument here appears unduly positive towards the prospect for success for the strategist, the following sobering judgement by MacGregor Knox serves well as a timely warning.

> In this bewildering world, the search for predictive theories to guide strategy has been no more successful than the search for such theories in other areas of human existence. Patterns do emerge from the past, and their study permits educated guesses about the range of potential outcomes. But the future is not an object of knowledge; no increase in processing power will make the owl of history a daytime bird. Similar causes do not always produce similar effects, and causes interact in ways unforeseeable even by the historically sophisticated. Worse still, individuals—with their ambitions, vanities and quirks—make strategy.[51]

Knox is correct, but only up to a point. As a historian he points rightly to the vanity of predictive theory. However, the strategist has no choice other than to act on the basis of such theory. The caveats of the scholarly historian have to be set against the practical necessity for strategy-making in the face of uncertainty. Fortunately, history does not reveal that purposeful strategy is impossible, just unreliable.

How best should the theory of strategy and the theory and practice of RMA speak to each other? That is the defining question for the next stage in this enquiry.

NOTES

1 . The purposes pursued in this book and the methodology employed do not require me to trek into the wild terrain of war causation. That is fortunate, because even the daunting theoretical challenges tackled here in the endeavour to effect fruitful collaboration between strategic theory, chaos theory, and RMA theory pale by comparison with those which obtain in the realm of war causation. Readers are advised that I am fully aware of the necessity for political context(s), foreign and domestic, if actual historical strategic behaviour is to be understood. Where appropriate, the political dimension (inter alia) of strategy and war is accorded the importance it merits. Readers will find insightful the commentary on the connection between political and military analysis in the third volume of Henry Kissinger's memoirs. Describing his argument over strategic arms control policy with the intellectually and even personally abrasive Secretary of Defense, James R.Schlesinger, Kissinger records, probably truthfully, that 'I was convinced that, at the end of the day, Schlesinger and I would come to an understanding because, in truth, our disagreements were essentially esoteric and technical or else bureaucratic.' Referring to their earlier, pre-governmental, personal relations as 'defense-intellectuals' in the 1960s, Kissinger writes of himself and Schlesinger: 'At that time, our views coincided on all essentials, the principal difference being that I was more concerned with geopolitical and he with technological challenges': *Years of Renewal* (London: Weidenfeld & Nicolson, 1999), p. 177.

2 . I do not discount the role of contingency. In Chapter 4 I cited 'Stonewall' Jackson's death after Chancellorsville and Robert E.Lee's 'lost order' before Antietam as prime examples of truly accidental occurrences which probably had major strategic significance. Especially with respect to the strictly personal element in the human dimension of strategy, contingency can loom very large. Napoleon was not simply one among others in an interchangeable file of men on horseback ready and able to express and employ the energy of the France that emerged from the successive crises of revolution. Similarly, a British government headed by Lord Halifax instead of Winston Churchill in June-July 1940 might well have reached a (temporary) political settlement with Hitler. Such a settlement in the west, and by extension in the south, could have tipped the balance in Germany's favour with respect to the real war that Hitler intended, with the USSR. For yet another example, a peaceful outcome to the Cuban missile crisis of October 1962 may have rested vitally upon the characters of and relationship between the US president and his principal and most trusted adviser, his brother Robert. The truth of the matter is that the historian can rarely be certain just how sensitive is

an outcome—in the case of the Kennedy brothers, of nuclear war or peace—to the details of the circumstances that produced it. This points to the potential relevance of chaos theory.

3 . The most essential background on the French Army up to the disastrous Battle(s) of the Frontiers, 14–25 August 1914 (14–22 August, Battle of Lorraine; 20–25 August, Battle of the Ardennes; 22–23 August, Battle of the Sambre) is provided in Gerd Krumeich, *Armaments and Politics in France on the Eve of the First World War: The Introduction of Three-Year Conscription, 1913–1914* (Leamington Spa: Berg Publishers, 1984); and Douglas Porch, *The March to the Marne: The French Army, 1871–1914* (Cambridge: Cambridge University Press, 1981). The international context is laid out in David G.Herrman, *The Arming of Europe and the Making of the First World War* (Princeton, NJ: Princeton University Press, 1996). For the performance of the French Army in 1870, see Michael Howard, *The Franco-Prussian War: The German Invasion of France, 1870–1871* (London: Methuen, 1981).

4 . Martin van Creveld claims that ‘the sheer size and weight of the German Army in 1914 proved wholly out of proportion to the means of tactical transportation at its disposal. This was true even though the really great increase in consumption came only after the campaign of the Marne was over’: *Supplying War: Logistics from Wallenstein to Patton* (Cambridge: Cambridge University Press, 1977), pp. 140–1. New research posing an existential challenge to the Plan is presented in Terence Zuber, ‘The Schlieffen Plan Reconsidered’, *War in History*, 6, 3 (July 1999), pp. 262–305. Zuber is not a man to mince words: he concludes: ‘There never was a “Schlieffen plan”’ (p. 305). In a war of ‘the two Terences’, Terence M.Holmes challenges with ‘The Reluctant March on Paris: A Reply to Terence Zuber’s “The Schlieffen Plan Reconsidered”’, *War in History*, 8, 2 (April 2001), pp. 208–32. But Terence Zuber has the better of the duel—thus far, at least—in his ‘Terence Holmes Reinvents the Schlieffen Plan’, *War in History*, 8, 4 (November 2001), pp. 468–76.

5 . George C.Thorpe, *Pure Logistics: The Science of War Preparation* (Washington, DC: National Defense University Press, 1986 [1917]), remains a classic. For further enlightenment see Archibald Wavell, *Generals and Generalship* (New York: Macmillan, 1943), esp. pp. 10–11. Wavell laments: ‘Unfortunately, in most military books strategy and tactics are emphasised at the expense of the administrative factors’ (p. 11). See also van Creveld, *Supplying War;* Julian Thompson, *The Lifeblood of War: Logistics in Armed Conflict* (London: Brassey’s, 1991); Joseph Sinclair, *Arteries of War: Military Transportation from Alexander the Great to the Falklands—and Beyond* (Shrewsbury: Airlife Publishing, 1992); John A.Lynn (ed.), *Feeding Mars: Logistics in Western Warfare from the Middle Ages to the Present* (Boulder, CO: Westview Press, 1993); and Thomas M.Kane, *Military Logistics and Strategic Performance* (London: Frank Cass, 2001).

6 . The issue is never numerical calculation per se; always it is the feasibility and relevance of such calculation. Determined calculators are never bereft of 'data' to manipulate. Readers interested in the scope for numerical analysis in strategy could do worse than peruse Bernard Brodie, 'Strategy as a Science', *World Politics*, 1, 4 (July 1949), pp. 476–88; Kenneth A.Boulding, *Conflict and Defense* (New York: Harper & Brothers, 1962); E.S.Quade (ed.), *Analysis for Military Decisions* (Chicago: Rand McNally, 1964); and Roland N.McKean (ed.), *Issues in Defense Economics* (New York: National Bureau of Economic Research, 1967).

7 . I am grateful to Michael I.Handel for his emphasis upon Clausewitz's insistence that war must be studied 'in the context of the whole, as a "gestalt"': *Who is Afraid of Carl von Clausewitz? A Guide to the Perplexed*, 8th edn (Newport, RI: Department of Strategy and Policy, US Naval War College, Summer 1999), p. 4.

8 . Andrew F.Krepinevich, 'Cavalry to Computer: The Pattern of Military Revolutions', *The National Interest*, 37 (Fall 1994), p. 30.

9 . Thomas J.Welch, 'Technology and Warfare', in Keith Thomas (ed.), *The Revolution in Military Affairs: Warfare in the Information Age* (Canberra: Australian Defence Studies Centre, 1997), p. 28 (emphasis in original).

10 . Carl von Clausewitz, *On War*, trans. Michael Howard and Peter Paret (Princeton, NJ: Princeton University Press, 1976 [1832]), p. 75.

11 . Ibid., p. 89.

12 . Ibid., p. 183; Michael Howard, 'The Forgotten Dimensions of Strategy', *Foreign Affairs*, 57, 5 (Summer 1979), pp. 975–86.

13 . Once revealed in action, wonder weapons invite technical-tactical, operational, strategic, or even political offsets. Genius in high command is vulnerable to a stray bullet or deadly virus, not to mention the implementing performance by the staff and army. Cunning tactical or operational ideas lose their cunning once they are run on the field of play and thereby are revealed. This is because of the paradoxical logic of conflict. There is an interdependently, but critically independently, behaving adversary. On this central logical point, Edward N.Luttwak, *Strategy: The Logic of War and Peace* (Cambridge, MA: Harvard University Press, 1987), is unsurpassed, and probably unsurpassable.

14 . Clausewitz, *On War*, p. 183.

15 . Handel, *Who is Afraid of Carl von Clausewitz?*, p. 4.

16 . Ibid.

17 .See especially Peter Paret: 'Napoleon and the Revolution in War', in Paret (ed.), *Makers of Modern Strategy: From Machiavelli to the Nuclear Age* (Princeton, NJ: Princeton University Press, 1986), pp.

123–42; *Understanding War: Essays on Clausewitz and the History of Military Power* (Princeton, NJ: Princeton University Press, 1992), pp. 75–84; 'Napoleon as Enemy'; and 'Revolutions in Warfare: An Earlier Generation of Interpreters', in Bernard Brodie, Michael D.Intriligator, and Roman Kolkowicz (eds), *National Security and International Stability* (Cambridge, (Cambridge, MA: Oelgeschlager, Gunn & Hain, 1983), pp. 157–69.

18 . Clausewitz, *On War*, p. 183.

19 . Ibid., p. 89.

20 . See Ajay Singh, 'Time: The New Dimension in War', *Joint Force Quarterly*, 10 (Winter 1995–96), pp. 56–61. One need hardly comment that there are no new dimensions in war.

21 . Van Creveld, *Supplying War*, ch. 5, and Harold A.Winters, *Battling the Elements: Weather and Terrain in the Conduct of War* (Baltimore, MD: Johns Hopkins University Press, 1998), chs 4 and 8 are useful. It is no longer fashionable to argue that 'The part played by the Red Army in 1941 in halting the enemy advance has been exaggerated by Soviet historians. Success was due mainly to geography and climate and thereafter to Stalin's determination… The resistance of the Soviet armed forces was probably of only subsidiary importance': Albert Seaton, *The Russo-German War 1941–45* (New York: Praeger, 1970), p. 221. Nonetheless, Russian geography and climate were unforgiving of German material weaknesses and infirmity of operational purpose. Excellent recent studies are David M.Glantz and Jonathan M.House, *When Titans Clashed: How the Red Army Stopped Hitler* (Lawrence: University Press of Kansas, 1995); and Horst Boog and others, *Germany and the Second World War, Vol. IV: The Attack on the Soviet Union* (Oxford: Clarendon Press, 1998).

22 . For example, with regard to the German Army in the Great War, General Sir Ian Hamilton has observed thus: 'In that force, created by Von Roon, a force which expired, so we hope, on the 11th November, 1918, we have the latest word on army manufacture—the typical army—and, for its own especial purpose of a short range, short time weapon, it stood supreme, enabling the German Empire to throw every iota of its strength into the contest from the moment the word mobilisation went forth. When the range and the time drew out longer and longer, the machine, and with it the nation, was, for the time being, absolutely used up—finished!': *The Soul and Body of an Army* (London: Edward Arnold, 1921), p. 34.

23 . Jean Colin, *The Transformations of War*, trans. L.H.R.Pope-Hennessy (London: Hugh Rees, 1912), p. 348.

24 . See Colin S.Gray, 'Inescapable Geography', in Gray and Geoffrey Sloan (eds), *Geopolitics, Geography, and Strategy* (London: Frank Cass, 1999), pp. 161–77.

25 . Intelligent recent studies of British strategic performance include: Christopher D.Hall, *British Strategy in the Napoleonic War, 1803–15* (Manchester: Manchester University Press, 1992); A.D. Harvey, *Collision of Empires: Britain in Three World Wars, 1793–1945* (London: Hambledon Press, 1992), pt 1; and esp. Rory Muir, *Britain and the Defeat of Napoleon, 1807–1815* (New Haven, CT: Yale University Press, 1996).

26 . Britain's premier maritime theorist, Sir Julian Corbett, has written that 'If we have gained complete command [of the sea], no invasion can take place, nor will it be attempted. If we have lost it completely no invasion will be necessary, since, quite apart from the threat of invasion, we must make peace on the best terms we can get': *Some Principles of Maritime Strategy*, ed. Eric J.Grove (Annapolis, MD: Naval Institute Press, 1988 [1911]), p. 239.

27 . For example, in a generally excellent book, Martin van Creveld offered the politically very acceptable conclusion that '[the average German soldier in the Second World War] did not as a rule fight out of a belief in Nazi ideology': *Fighting Power: German and US Army Performance, 1939–1945* (Westport, CT: Greenwood Press, 1982), p. 163. A different tale emerges in Omer Bartov, *Hitler's Army: Soldiers, Nazis, and War in the Third Reich* (New York: Oxford University Press, 1991); while Stephen G.Fritz, *Frontsoldaten: The German Soldier in World War II* (Lexington: University Press of Kentucky, 1995), offers some correction to Bartov.

28 . H.R.McMaster, *Dereliction of Duty: Lyndon Johnson, Robert McNamara, the Joint Chiefs of Staff, and the Lies that Led to Vietnam* (New York: Harper Collins, 1997), is truly damning. It can be supplemented by Robert Buzzanco, *Masters of War: Military Dissent and Politics in the Vietnam Era* (Cambridge: Cambridge University Press, 1996).

29 . See Andrew F.Krepinevich, Jr, *The Army and Vietnam* (Baltimore: Johns Hopkins University Press, 1986); Michael A.Hennessy, *Strategy in Vietnam: The Marines and Revolutionary Warfare in I Corps, 1965–1972* (Westport, CT: Praeger Publishers, 1997); and Jeffrey Record, *The Wrong War: Why We Lost in Vietnam* (Annapolis, MD: Naval Institute Press, 1998). Should anyone be interested, I believe that the United States could have won in Vietnam. There is merit in Michael Lind, *Vietnam, The Necessary War: A Reinterpretation of America's Most Disastrous Military Conflict* (New York: Free Press, 1999); Lewis Sorley, *A Better War: The Unexamined Victories and Final Tragedy of America's Last Years in Vietnam* (New York: Harcourt Brace, 1999); and especially in C.Dale Walton, *The Myth of Inevitable US Defeat in Vietnam* (London: Frank Cass, 2002).

30 . Glantz and House, *When Titans Clashed*. See also Jürgen E.Förster, 'The Dynamics of *Volkegemeinschaft:* The Effectiveness of the German Military Establishment in the Second World War', and John E.Jessup, 'The Soviet Armed Forces in the Great Patriotic War, 1941–5', in Allan R.

Millett and Williamson Murray (eds), *Military Effectiveness, Vol. III: The Second World War* (Boston, MA: Allen & Unwin, 1988), respectively pp. 180–220, 256–76. For a helpful guide to sources on the Russo-German War of 1941–45, see Rolf- Dieter Müller and Gerd R.Ueberschär, *Hitler's War in the East: A Critical Assessment* (Providence, RI: Berghahn Books, 1997).

31 . Bernard Brodie once wrote famously that 'good strategy presumes good anthropology and sociology. Some of the greatest military blunders of all time have resulted from juvenile evaluations in this department': *War and Politics* (New York: Macmillan, 1973), p. 332. Useful studies include Ken Booth, *Strategy and Ethnocentrism* (London: Croom Helm, 1979); and Robert B.Bathurst, *Intelligence and the Mirror: On Creating an Enemy* (London: Sage Publications, 1993). Much of the sociological scholarship that does have a military connection is thoroughly astrategic.

32 . This dimension of strategy has been debated heatedly of recent years: Shu Guang Zhang, *Deterrence and Strategic Culture: Chinese-American Confrontations, 1949–1958* (Ithaca, NY: Cornell University Press, 1992); Alastair Iain Johnston, *Cultural Realism: Strategic Culture and Grand Strategy in Chinese History* (Princeton, NJ: Princeton University Press, 1995); idem, 'Strategic Cultures Revisited: Reply to Colin Gray', *Review of International Studies*, 25, 3 (July 1999), pp. 519–23; Peter J.Katzenstein (ed.), *The Culture of National Security: Norms and Identity in World Politics* (New York: Columbia University Press, 1996); Michael C.Desch, 'Culture Clash: Assessing the Importance of Ideas in Security Studies', *International Security*, 23, 1 (Summer 1998), pp. 141–70; Colin S.Gray, 'Strategic Culture as Context: The First Generation of Theory Strikes Back', *Review of International Studies*, 25, 1 (January 1999), pp. 49–69; Keith R.Krause (ed.), *Culture and Security: Multilateralism, Arms Control and Security Building* (London: Frank Cass, 1999).

33 . Military behaviour—threats and deeds in the field—has to have strategic effect, which in its turn must have political consequences. These are not simply trivial definitional truths. Even if you regard some conduct of warfare as more cultural, including recreational, than purposively strategic, strategy and politics still are relevant. Strategic effect is strategic effect, regardless of whether or not the soldiers in question enjoyed the activity. Martin van Creveld, *The Transformation of War* (New York: Free Press, 1991), and John Keegan, *A History of Warfare* (London: Hutchinson, 1993), are seriously confused on these basic matters.

34 . Organisation for strategy-making is emphasised most effectively in Williamson Murray and Mark Grimsley, 'Introduction: On Strategy', and MacGregor Knox, 'Conclusion: Continuity and Revolution in the Making of Strategy', in Murray, Knox, and Alvin Bernstein (eds), *The Making of Strategy: Rulers, States, and War* (Cambridge: Cambridge University Press, 1994), respectively pp. 1–23, 614–45 (esp. 615–21).

35 . Clausewitz, *On War*, p. 131.

36 . Michael Glover, *Peninsular Preparation: The Reform of the British Army, 1795–1809* (Cambridge: Cambridge University Press, 1963), is a superior example of an excellent study of military administration.

37 . Readers behind the curve of current military jargon are advised that war now is waged in 'battlespace'. For example: Stuart E.Johnson and Martin C.Libicki (eds), *Dominant Battlespace Knowledge* (Washington, DC: Institute for National Strategic Studies, National Defense University, April 1996). The concept of, or at least the word, battle-space, pervades the leading US military vision statements of the 1990s: Joint Chiefs of Staff, 'Joint Vision 2010: America's Military—Preparing for Tomorrow', *Joint Force Quarterly*, 12 (Summer 1996), pp. 34–49; and Joint Chiefs of Staff, *Joint Vision 2020* (Washington, DC: US Government Printing Office, June 2000).

38 . Clausewitz, *On War*, p. 97.

39 . Ibid. (emphasis in original).

40 . In an outstanding essay, Michael Howard explains the vital distinctions between command, control, and leadership. He advises that 'The first two demand a capacity for comprehending often highly complex factors and thus require minds of above average intelligence. The last consists almost entirely of what Clausewitz termed "moral qualities", of a kind that can often coexist with a complete absence of any significant intellectual capacity at all': 'Leadership in the British Army in the Second World War: Some Personal Observations', in G.D.Sheffield (ed.), *Leadership and Command: The Anglo-American Military Experience since 1861* (London: Brassey's (UK), 1997), p. 117.

41 . For classic, indeed classical, graphical representation of the geopolitical geometry of enmity and alliance, see Kautilya, *The Arthashastra*, trans. L.N.Rangarajan (New Delhi: Penguin, 1992), pp. 557–8.

42 . Martin C.Libicki, 'The Emerging Primacy of Information', *Orbis*, 40, 2 (Spring 1996), pp. 261–74. I take issue with the thesis that technology is demoting the significance of geography, in 'The Continued Primacy of Geography', *Orbis*, 40, 2 (Spring 1996), pp. 247– 59, and in 'Inescapable Geography'. The editors of *Orbis*, not I, picked 'primacy' for my title. Geography is important, but cannot claim 'primacy'.

43 . Barry D.Watts, *Clausewitzian Friction and Future War*, McNair Paper 52 (Washington, DC: Institute for National Strategic Studies, National Defense University, October 1996), is outstanding, if difficult. For the master's argument, see Clausewitz, *On War*, pp. 85–6, 101, 119–21.

44 . For example, was it good luck or sound practice that enabled British armoured cars of the Tank Corps' 17th Battalion to capture documents containing vital details about the central section of the

Hindenburg Line, when they exploited the success of the 5th Australian Division on 8 August 1918, the first day of the Battle of Amiens? See J.P.Harris, *Amiens to the Armistice: The BEF in the Hundred Days' Campaign, 8 August-11 November 1918* (London: Brassey's, 1998), pp. 91–2.

45 . Clausewitz, *On War*, p. 75.

46 . Napoleon, quoted in Peter J.Tsouras, 'Napoleon and his Words', in Philip J. Haythornthwaite and others, *Napoleon: The Final Verdict* (London: Arms and Armour Press, 1998), p. 294.

47 . Booth, *Strategy and Ethnocentrism*, p. 147.

48 . See Colin S.Gray, *Explorations in Strategy* (Westport, CT: Praeger Publishers, 1998), pp. 164–5, 168–74; idem, 'Handfuls of Heroes on Desperate Ventures: When do Special Operations Succeed?' *Parameters*, 29, 1 (Spring 1999), pp. 2–24. See also William H. McRaven, *SPEC OPS, Case Studies in Special Operations Warfare: Theory and Practice* (Novato, CA: Presidio Press, 1995); John Arquilla (ed.), *From Troy to Entebbe: Special Operations in Ancient and Modern Times* (Lanham, MD: University Press of America, 1996); and Susan L.Marquis, *Unconventional Warfare: Rebuilding US Special Operations Forces* (Washington, DC: Brookings Institution Press, 1997).

49 . Sun Tzu, *The Art of War*, trans. Ralph D.Sawyer (Boulder, CO: Westview Press, 1994), p. 168.

50 . Clausewitz, *On War*, p. 204 (emphasis in original).

51 . Knox, 'Conclusion: Continuity and Revolution in the Making of Strategy', p. 645.