

Chapter 2:

On the Nature of Military Theory

Harold R. Winton

The quest for a theory of spacepower is a useful enterprise. It is based on the proposition that before one can intelligently develop and employ spacepower, one should understand its essence. It is also based on the historical belief that, over the long haul, military practice has generally benefited from military theory.¹ While such a conviction is generally true, this happy state has not always been realized. Faulty theory has led to faulty practice perhaps as often as enlightened theory has led to enlightened practice.² This does not necessarily call into question the utility of theory per se, but it does reinforce the need to get it about right. Taking the broader view, it is a trait of human nature to yearn for understanding of the world in which we live; and when a relatively new phenomenon such as spacepower appears on the scene, it is entirely natural to seek to comprehend it through the use of a conceptual construct. Thus, one can at least hope that the common defense will be better provided for by having a theory of spacepower than by not having one.

This chapter will deal only tangentially with spacepower. Its main task is to explore the nature of theory itself. First, it examines the general and somewhat problematic relationship between theory and the military profession. Next, it surveys what theorists and academics say about the utility of theory. It then seeks to determine what utility theory actually has for military institutions, particularly in the articulation of military doctrine. Finally, it offers a few implications that may be germane to a theory of spacepower.

Theory and the Military Profession

To examine the relationship between theory and the military profession, we must first assess the salient characteristics of each.³

Webster's definition of *theory* as "a coherent group of general propositions used as principles of explanation for a class of phenomena"⁴ is a pretty good place to start. It highlights the essential task of explanation and the desirable criterion of coherence. But if we stand back a bit, we can tease out several other functions of theory. The first two occur before its explanatory function. Theory's first task is to define the field of study under investigation, or, in Webster's words, the "class of phenomena." In visual terms, this defining act draws a circle and declares that everything inside the circle is encompassed by the theory, while everything outside it is not. In the theory of war, for example, Carl von Clausewitz offers two definitions. The first states baldly, "War is thus an act of force to compel our enemy to do our will."⁵ After introducing the limiting factor of rationality into the consideration of what war is, Clausewitz expands this definition as

follows: "War is not a mere act of policy but a true political instrument, a continuation of political activity with other means."⁶ A synthesis of these two definitions would be that war is the use of force to achieve the ends of policy. Although the utility of this definition has been argued at some length, it leaves no doubt as to what Clausewitz's theory is about.⁷

The next task of theory is to categorize—to break the field of study into its constituent parts. Here it may be helpful to visualize the subject of the theory as a spherical object rather than a circle. The sphere can be divided in many different ways: horizontally, vertically, diagonally, or, if it is a piece of citrus fruit, into sections that follow the natural internal segmentation. Again, reference to Clausewitz is instructive. War has two temporal phases—planning and conduct—and two levels—tactics and strategy—each with its own dynamics.⁸ Furthermore, wars could also be categorized according to their purpose (offensive or defensive) and the amount of energy (limited or total) to be devoted to them.⁹ A word about categorization is important here because it relates to the continuous evolution of theory. Theories tend to evolve in response to two stimuli: either new explanations are offered and subsequently verified that more accurately explain an existing reality, or the field of study itself changes, requiring either new explanations or new categories. An example of the former is the Copernican revolution in astronomy.¹⁰ An example of the latter is the early 20th-century discovery of the *operation*, which emerged from the industrial revolution's influence on the conduct of war, as the connecting link between a battle and a campaign and subsequently led to the study of *operational art* as a new subdiscipline of military art and science.¹¹

The third, and by far the most important, function of theory is to explain. Webster's definition cited above is correct in emphasizing theory's explanatory role, for, as Nicolaus Copernicus, Johannes Kepler, Albert Einstein, and scores of other theorists so clearly demonstrated, explanation is the soul of theory. In the military sphere, Alfred Thayer Mahan's statement that the sea is "a wide common, over which men may pass in all directions, but on which some well-worn paths show that controlling reasons have led them to choose certain lines of travel rather than others" explains the underlying logic of what are today called *sea lines of communication*.¹² Reading further in Mahan, one finds an extended explanation of the factors influencing the seapower of a state.¹³ Explanation may be the product of repetitive observation and imaginative analysis, as Copernicus' was, or of "intuition, supported by being sympathetically in touch with experience," as Einstein's was.¹⁴ In either case, theory without explanatory value is like salt without savor—it is worthy only of the dung heap.

But theory performs two additional functions. First, it connects the field of study to other related fields in the universe. This marks the great utility of Clausewitz's second definition of war, noted above. Although war had been used as a violent tool of political institutions dating to before the Peloponnesian War, Clausewitz's elegant formulation, which definitively *connected* violence with political intercourse, was perhaps his most important and enduring contribution to the theory of war.

Finally, theory anticipates. The choice of this verb is deliberate. In the physical realm, theory predicts. Isaac Newton's theory of gravitation and Kepler's laws of planetary motion, combined with detailed observations of perturbations in the orbit of Uranus and systematic hypothesis testing, allowed Urbain Jean Joseph Le Verrier and John Couch Adams independently to predict the location of Neptune in 1845.¹⁵ But action and reaction in the human arena, and therefore in the study of war, are much less certain, and we must be content to live with a lesser standard. Nevertheless, anticipation can be almost as important as prediction. In the mid-1930s, Mikhail Tukhachevskii and a coterie of like-minded Soviet officers discovered that they had the technological capacity "not only to exercise pressure directly on the enemy's front line, but to penetrate his dispositions and to attack him simultaneously over the whole depth of his tactical layout."¹⁶ They lacked both the means and the knowledge that would allow them to extend this "deep battle" capability to the level of "deep operations," where the problems of coordination on a large scale would become infinitely more complex. But the underlying conceptual construct—that is, what was practically feasible on a small level was theoretically achievable on a much larger scale—was a powerful notion that has only recently been fully realized in the performance of the U.S. Armed Forces in the Gulf Wars of 1991 and 2003.

But theory also has its limitations. No theory can fully replicate reality. There are simply too many variables in the real world for theory to contemplate them all. Thus, all theories are to some extent simplifications. Second, as alluded to earlier, things change. In the realm of military affairs, such change is uneven, varying between apparent stasis and virtual revolution. Nevertheless, military theory always lags behind the explanatory curve of contemporary developments. Thus, we can here paraphrase Michael Howard's famous stricture on doctrine, theory's handmaiden, and declare dogmatically that whatever theories exist (at least in the realm of human affairs), they are bound to be wrong—but it is the task of theorists to make them as little wrong as possible.¹⁷

This observation leads to a brief consideration of the several sources of theory. The first lies in the nature of the field of study about which the theory is being developed. As Clausewitz noted in his discussion of the theory of strategy, the ideas about the subject had to "logically derive from basic necessities."¹⁸ These necessities are rooted in the nature of the thing itself, its phenomenology. As time passes, men accumulate experience related to the phenomenon, and this experience contributes to the refinement and further development of theory. As Mahan famously noted of naval strategy, "The teachings of the past have a value which is in no degree lessened."¹⁹ But if theory has one foot firmly rooted in the empirical past, it also has the other planted in the world of concepts. In other words, theory draws from other relevant theory. It is no accident that Julian Corbett's instructive treatise *Some Principles of Maritime Strategy* begins with an extended recapitulation of *On War*, which might lightheartedly be characterized as "Clausewitz for Sailors."²⁰ Corbett was keenly aware that the theory of war at sea, while distinct in many ways from the theory of war on land, had to be rooted in a general conceptual framework of war itself. He also knew that Clausewitz provided a solid base upon which to build. But Corbett's work is also emblematic of another source of theory: dissatisfaction with existing theory. This notion of dissatisfaction runs like a brightly colored thread

throughout almost all of military theory. Clausewitz wrote because he was fed up with theories that excluded moral factors and genius from war; Corbett wrote to correct Mahan's infatuation with concentration of the fleet and single-minded devotion to the capital ship; and J.F.C. Fuller railed against what he called the *alchemy of war*, whose poverty of thought and imagination had led to the horrors of World War I.²¹

To sum up, although theory is never complete and is always bound to be at least somewhat wrong, it performs several useful functions when it defines, categorizes, explains, connects, and anticipates. And it is primarily a product of the mind. There are good reasons that the world produces relatively few theorists worthy of the name. The formulation of useful theory demands intense powers of observation, ruthless intellectual honesty, clear thinking, mental stamina of the highest order, gifted imagination, and other attributes that defy easy description.²² These are not qualities normally associated with the military profession.

Why is this so? First, war is an intensely practical activity and a ruthless auditor of both individuals and institutions. The business of controlled violence in the service of political interest demands real attention to detail and real results. Complex organizations of people with large amounts of equipment must be trained and conditioned to survive under conditions of significant privation and great stress, moved to the right place at the right time, and thrust into action against an adversary determined to kill or maim in frustrating the accomplishment of their goals. Those who cannot get things done in this brutal and unforgiving milieu soon fall by the wayside.

Second, war demands the disciplined acceptance of lawful orders even when such orders can lead to one's own death or disfigurement. A Soldier, Sailor, Marine, or Airman unwilling to follow orders is a contradiction in terms. Thus, there is an inherent bias in military personnel to obey rather than to question. On the whole, this tendency does more good than harm, but it tends to limit theoretical contemplation.

Finally, war is episodic. Copernicus could look at the movement of the planets on any clear night and at the sun on any clear day. But war comes and goes, rather like some inexplicable disease, and the resulting discontinuities make it a difficult phenomenon about which to theorize.

I do not mean to imply that the military profession is inherently antitheoretical. There are countervailing tendencies. As both Sun Tzu and Clausewitz cogently observed, the very seriousness of war provides a healthy stimulus to contemplation.²³ Its episodic nature, while restricting opportunity for direct observation, does provide opportunity for reflection. Furthermore, the very complexity of war, while limiting the ability of theorists to master it, creates incentives for military practitioners to discover simplifying notions that reduce its seeming intractability. And we would not have seen the appearance of institutions of higher military learning, societies for the study of the martial past, or a virtual explosion of military literature over the last 20 years were there not some glimmerings of intellectual activity surrounding the conduct of war.

But the larger point remains: there are underlying truths about both theory and the military profession that make the relationship between the two problematic at best. Despite this inherently uneasy relationship, there is sufficient evidence that theory has utility in military affairs to justify probing more deeply. In doing so, I would like to follow a dual track: to explore the question of what utility theory should have for military institutions and what utility it actually does have. In investigating the former, the study is confined to the opinions of theorists and educators. In the latter, it plumbs the empirical evidence. But an important caveat before proceeding: tracing connections between thought and action is intrinsically difficult. When the nature of the thought is conceptual, rather than pragmatic, as theory is bound to be, such sleuthing becomes even more challenging, and one frequently is forced to rely on inferential conjecture and even a bit of imagination to connect the deed to an antecedent proposition.

The Theorists Make Their Case

A narrow but rich body of discourse about theory's contribution to individual military judgment is densely packed in *On War*. Clausewitz's line of thought is most cogently revealed in book two, "On the Theory of War." He begins this discourse by classifying war into the related but distinct fields of tactics and strategy. He follows with a stinging critique of the theories of his day that seek to exclude from war three of its most important characteristics: the action of moral forces, the frustrating power of the enemy's will, and the endemic uncertainty of information. From this, he deduces that "a positive teaching is unattainable."²⁴ Clausewitz sees two ways out of this difficulty. The first is to admit baldly that whatever theory is developed will have decreasing validity at the higher levels of war where "almost all solutions must be left to imaginative intellect."²⁵ The second is to argue that theory is a tool to aid the contemplative mind rather than a guide for action.

This formulation leads to some of the most majestic passages of *On War*. 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 thorough familiarity with it." Clausewitz elaborates:

Theory will have fulfilled its main task when it is used to analyze the constituent elements of war, to distinguish precisely what at first 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 war through 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 avoid pitfalls. . . . Theory exists so that one need not start afresh each time sorting out the material and plowing through it, but will find it ready to hand and in good order. 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.²⁶

This view of theory has a particular implication for military pedagogy. It requires that education begin with broad principles, rather than an accumulation of technical details. "Great things alone," Clausewitz argued, "can make a great mind, and petty things will make a petty mind unless a man rejects them as alien."²⁷ But Clausewitz also makes it abundantly clear that the cumulative insights derived from theory must ultimately find practical expression:

The knowledge needed by a senior commander is distinguished by the fact that it can only be attained by a special talent, through the medium of reflection, study, and thought: an intellectual instinct which extracts the essence from the phenomena of life, as a bee sucks honey from a flower. In addition to study and reflection, life itself serves as a source. Experience, with its wealth of lessons, will never produce a *Newton* or an *Euler*, but it may well bring forth the higher calculations of a *Condé* or a *Frederick*. . . . By total assimilation with his mind and life, the commander's knowledge must be transformed into a genuine capability. . . . It [theory] will be sufficient if it helps the commander acquire those insights that, once absorbed into his way of thinking, will smooth and protect his progress, and will never force him to abandon his convictions for the sake of any objective fact.²⁸

Thus, a century before Carl Becker advanced the proposition that "Mr. Everyman" had to be his own historian in order to function effectively in daily life, Clausewitz argued that every commander had to be his own theorist in order to function effectively in war.²⁹ In Clausewitz's view, the essential role of theory was to aid the commander in his total learning, which synthesized study, experience, observation, and reflection into a coherent whole, manifested as an ever-alert, perceptive military judgment.

There is, however, another view of the utility of theory, most famously articulated by Baron Antoine Henri de Jomini, Clausewitz's chief competitor in this arena. Jomini indeed believed in the power of positive teaching. Although he was prepared to admit that war as a whole was an art, strategy—the main subject of his work—was "regulated by fixed laws resembling those of the positive sciences."³⁰ Following this point-counterpoint formula again, he conceded that bad morale and accidents could prevent victory, but:

These truths need not lead to the conclusion that there can be no sound rules in war, the observance of which, the chances being equal, will lead to success. It is true that theories cannot teach men with mathematical precision what they should do in every possible case; but it is also certain that they will always point out the errors which should be avoided; and this is a highly important consideration, for these rules thus become, in the

hands of skillful generals commanding brave troops, means of almost certain success.³¹

This fundamental belief in the efficacy of prescriptive theory led Jomini to formulate his theory itself much differently than Clausewitz. At the epicenter of Clausewitz's theory, we find a trinity of the elemental forces of war—violence, chance, and reason—acting on each other in multifarious ways, whose dynamics the statesman and commander must thoroughly consider before deciding whether to go to war and how to conduct it.³² Jomini's central proposition consists of a series of four maxims about strategy that he summarized as "bringing the greatest part of the forces of an army upon the important point of a theater of war or of the zone of operations."³³ Jomini's principle-based approach to theory has had great endurance over the years. It perhaps found its most complete expression in J.F.C. Fuller's *The Foundations of the Science of War*, a treatise whose nine didactic imperatives, each expressed as a single word or short phrase, continue to resonate in contemporary doctrinal manuals.³⁴

Clausewitz's and Jomini's views of theory were not mutually exclusive. Jomini addressed some of the wider considerations of policy central to Clausewitz, particularly in the opening chapter of *The Art of War*.³⁵ And Clausewitz occasionally engaged in formulaic statements, perhaps most notably in his observation that "destruction of the enemy force is always the superior, more effective means, with which others cannot compete."³⁶ Nevertheless, their two approaches—one descriptive, the other prescriptive—represent the two normative poles concerning the utility of theory.

But we find useful insights into the utility of theory from more modern observers as well. In his 1959 foreword to Henry E. Eccles's important but much-neglected work, *Logistics in the National Defense*, Henry M. Wriston, then president of the American Assembly at Columbia University, opined, "Theory is not just dreams or wishful thinking. It is the orderly interpretation of accumulated experience and its formal enunciation as a guide to future intelligent action to better that experience."³⁷ In this pithy and elegant formulation, Wriston captures an important truth: the fundamental social utility of theory is to help realize man's almost universal longing to make his future better than his past. The fact that the book that followed offered a theory of military logistics was but a particular manifestation of a general verity. Several years later, J.C. Wylie, a reflective, combat-experienced Sailor, developed a formulation similar to Wriston's that described the mechanics of translating theory into action:

Theory serves a useful purpose to the extent that it can collect and organize the experiences and ideas of other men, sort out which of them may have a valid transfer value to a new and different situation, and help the practitioner to enlarge his vision in an orderly, manageable and useful fashion—and then apply it to the reality with which he is faced.³⁸

In sum, there are two somewhat polar philosophies of how theory should influence practice. In the Clausewitzian view, it does so indirectly by educating the judgment of the practitioner; in the Jominian view, it does so directly by providing the practitioner

concrete guides to action. Wriston and Wylie, both slightly more Clausewitzian than Jominian, provide a useful synthesis and update of Clausewitz and Jomini, rearticulating the value of theory to the military professional.

Influence of Theory on Military Institutions

In the modern age, theory has its most immediate influence on military institutions in the form of doctrine, a sort of stepping stone between theory and application. Along a scale stretching from the purely abstract to the purely concrete, doctrine occupies something of a middle ground representing a conceptual link between theory and practice. Having come much into vogue in the U.S. Armed Forces since the end of the Vietnam War and with its popularity propagated to many other institutions as well, doctrine also represents, in a sense, sanctioned theory. In other words, there are two principal distinctions between theory and doctrine: the latter is decidedly more pragmatic, and it is stamped with an institutional imprimatur. How does theory influence doctrine? Generally speaking, we would expect theory to provide general propositions and doctrine to assess the extent to which these strictures apply, fail to apply, or apply with qualifications in particular eras and under particular conditions. In other words, the intellectual influence flows from the general to the particular. But at times, the relationship is reversed. This occurs when doctrine seeks to deal with new phenomena for which theory has not yet been well developed, such as for the employment of nuclear weapons in the 1950s, or when doctrine developers themselves formulate new ways of categorizing or new relational propositions. In cases such as these, doctrine may drive theory. In seeking to examine the relationship between the two in detail, we will explore the theoretical underpinnings of the 1982 and 1986 statements of U.S. Army doctrine and the 1992 articulation of U.S. Air Force doctrine.

Our first laboratory for exploring these relationships is the Army in the aftermath of the Vietnam War. In 1976, it promulgated Field Manual (FM) 100–5, *Operations*. This manual was deliberately crafted by its principal architect, General William E. DePuy, first commander of the U.S. Army Training and Doctrine Command (TRADOC), to shake the Army out of its post-Vietnam miasma and provide a conceptual framework for defeating a Soviet incursion into Western Europe.³⁹ It succeeded in the first but failed in the second. DePuy definitely got the Army's attention, and he culturally transformed it from being indifferent toward doctrine to taking it quite seriously. But his fundamental concept of piling on in front of Soviet penetrations, which he referred to as the "Active Defense," did not find favor. It was seen as reactive, rather than responsive; dealing with the first battle, but not the last; and insufficiently attentive to Soviet formations in the second operational and strategic echelons. Thus, the stage was set for a new manual, a new concept, and a new marketing label.

The new manual was the 1982 edition of FM 100–5; the new concept was to fight the Soviets in depth and hit them at unexpected times from unexpected directions; and the new marketing label was "AirLand Battle." The principal authors were two gifted officers, L.D. "Don" Holder and Huba Wass de Czege. Both had advanced degrees from Harvard University (Holder in history, Wass de Czege in public administration); both

were combat veterans of the Vietnam War; and both were sound, practical soldiers. The manual they produced under the direction of General Donn A. Starry, DePuy's successor at TRADOC, was clearly informed by theory as well as history. From Clausewitz came notions such as the manual's opening sentence, "There is no simple formula for winning wars"; a quotation to the effect that "the whole of military activity must . . . relate directly or indirectly to the engagement"; "The objective of all operations is to destroy the opposing force"; and another direct citation characterizing the defense as a "shield of [well-directed] blows."⁴⁰ But there was also a strong element of indirectness in the manual that one could trace to the ideas of Sun Tzu, who was mentioned by name, and Basil H. Liddell Hart, who was not. Sun Tzu was quoted to the effect that "rapidity is the essence of war; take advantage of the enemy's unreadiness, make your way by unexpected routes, and attack unguarded spots"; soldiers were adjured that "our tactics must appear formless to the enemy"; and one of the seven combat imperatives was to "direct friendly strengths against enemy weaknesses."⁴¹ Additionally, the manual's extensive discussion of "Deep Battle," which advocated striking well behind enemy lines to disrupt the commitment of reinforcements and subject the opposing force to piecemeal defeat, drew heavily on the legacy of Mikhail Tukhachevskii, V.K. Triandafillov, A.A. Svechin, and other Soviet thinkers of the 1920s and 1930s.⁴² Although it was politically infeasible to acknowledge this intellectual debt at the height of the Cold War, the apparent reasoning here was that one had to fight fire with fire. And the strong emphasis on "Deep Battle" was an outgrowth of an intensive study of Soviet military practices dating back to the earliest years of the Red Army. A further reflection of this debt was the introduction of a variation of the Soviet term *operational art* into the American military lexicon as the *operational level of war*.⁴³

When the manual was updated 4 years later, a third author, Richard Hart Sinnreich, was brought into the work. Sinnreich's professional and academic credentials were just as sound as those of his two compatriots: combat time in Vietnam, an advanced degree in political science from The Ohio State University, and well-developed soldiering skills. Holder, Wass de Czege, and Sinnreich engaged in a collaborative effort that expanded and conceptualized the notion of operational art. But rather than associating the term *operational* strictly with large-scale operations, as had been done in the previous edition, the 1986 manual defined *operational art* as "the employment of military forces to attain strategic goals in a theater of war or theater of operations through the design, organization, and conduct of campaigns and major operations."⁴⁴ This depiction of operational art as a conceptual link between tactical events (the building blocks of major operations) and strategic results significantly broadened the Soviet concept and made it applicable to the wide variety of types of wars that the U.S. Army might have to fight. It also harkened back to Clausewitz's definition of strategy as "the use of an engagement for the purpose of the war."⁴⁵ The manual then ventured into some theory of its own in requiring the operational commander to address three issues: the conditions required to effect the strategic goal, the sequence of actions necessary to produce the conditions, and the resources required to generate the sequence of actions. The combination of a new definition of operational art and a framework for connecting resources, actions, and effects gave the manual an underlying coherence that made it an extremely valuable document in its day and an admirable example of the genre of doctrinal literature.

Roughly contemporaneously with the publication of the second expression of the Army's AirLand Battle doctrine, a group of Airmen with a scholastic bent was assembled at the Airpower Research Institute (ARI) of the U.S. Air Force College of Aerospace Doctrine, Research, and Education to launch a bold experiment in the formulation of Air Force basic doctrine. This effort was based on an idea put forth by the highly respected Air Force historian Robert Frank Futrell, who opined that doctrine should be published with footnotes to document the evidence supporting the doctrinal statements.⁴⁶ The ARI Director, Dennis M. Drew, a Strategic Air Command warrior who had served at Maxwell Air Force Base since the late 1970s and held an advanced degree in military history from the University of Alabama, decided to put Futrell's idea to the test. But he and his research/writing team ultimately determined to expand on Futrell's basic notion. They would publish the doctrine in two volumes. The first, relatively thin, document would contain the bare propositional inventory; the second, more substantial, tome would lay out the evidence upon which the statements in the first were based. The process involved a good deal of both research and argument; but by the eve of the 1991 Gulf War, Drew and his team had produced a workable first draft. Publication was delayed until 1992 to allow the Air Force to assimilate the experience of that war. The result was what Air Force Chief of Staff Merrill A. McPeak called "one of the most important documents published by the United States Air Force."⁴⁷ Arguably, he was correct. No other American military Service had ever mustered the intellectual courage to put its analysis where its propositions were. It was potentially, in form alone, a paradigm for a new, analytically rigorous approach to the articulation of doctrine.⁴⁸

As one would suspect, the primary influence on the manual was empirical. Historical essays addressed issues such as the environment, capabilities, force composition, roles and missions, and employment of aerospace power as well as the sustainment, training, organizing, and equipping of aerospace forces.⁴⁹ But there was a notable conceptual cant as well. The opening pages either paraphrased or quoted Clausewitz: "War is an instrument of political policy"; "the military objective in war is to compel the adversary to do our will"; and "war is characterized by 'fog, friction, and chance.'"⁵⁰ And the notion that "an airman, acting as an air component commander, should be responsible for employing all air and space assets in the theater" was right out of Giulio Douhet and Billy Mitchell.⁵¹ There was also, like the 1982 version of FM 100-5, a nod in the direction of Sun Tzu and Liddell Hart: "Any enemy with the capacity to be a threat is likely to have strategic vulnerabilities susceptible to air attack; discerning those vulnerabilities is an airman's task."⁵² The only place that the propositional inventory appeared to be but thinly supported by underlying concepts or evidence was a page-and-a-quarter insert titled "An Airman's View," which contained a series of statements that could perhaps be summed up in a single aphorism: airpower does it better.⁵³ Nevertheless, the 1992 statement of Air Force basic doctrine represented a bold, promising new approach to doctrinal formulation and articulation. Given this strong dose of intellectual rigor, it is not surprising that the experiment was short-lived.⁵⁴

Nevertheless, in summing up the actual interplay between theory and the military profession, we can conclude that the institutional relationship between military theory on the one hand and military doctrine on the other is fairly direct.

Implications for a Theory of Spacepower

Having surveyed the nature of military theory, the general relation between theory and the military profession, and the particular relationship between theory and doctrine, it remains to suggest a few implications of this analysis for the theory of spacepower.

First, great care and extended debate should be devoted to articulating the central proposition, or main idea, of spacepower theory. One that is cast narrowly to focus only on spacepower's contributions to national security will take the theory in one direction. One that is cast more broadly to acknowledge spacepower's contributions to the expansion of man's knowledge of the universe will take it in another. Within the narrower ambit of national security, the construct of the theory should be informed by its purpose, which is related to the target audience. Here, Clausewitz's admonition is germane. In this author's opinion, one should not aim at some sort of positivist teaching that will spell out in precise and unambiguous fashion exactly what some future space forces commander or policymaker influencing the development of spacepower should do in a given situation. Rather, the theory should aim to *assist the self-education* of such individuals. To do this, it should focus on *explanatory relationships* within categories of spacepower itself and among spacepower and other related fields in the military-political universe. Given the relative newness of spacepower as both an instrument of military force and a vehicle for scientific exploration, and given as well the speed at which technological developments are likely to alter the physics of relationships among space-power subfields, it should be the tenor of a spacepower theory to develop a fairly firm list of questions that will inform the development and employment of spacepower but to recognize that the answers to those questions can change both rapidly and unexpectedly and must, therefore, remain rather tentative. Finally, it would be helpful to use the five-fold functions of definition, categorization, explanation, connection, and anticipation as a heuristic device to check the work for its efficacy and relevance. Such a review will not guarantee a useful product. It may, however, help to reduce errors and to sharpen the analysis of relevant issues.

In summary, both the nature and history of military theory indicate that the task of developing a comprehensive, constructive theory of space-power will not be easy. Nor can the present attempt be considered the final word on the subject. It can, nevertheless, move the dialogue on spacepower to a new and more informed level and thus make a worthwhile contribution to the enhancement of national security and perhaps to the conduct of broader pursuits as well.

Notes

1. The terms of reference establishing the need for a theory of spacepower specifically alluded to this rationale, noting that "the lack of a space power theory is most notable to the national security sector. Military theorists such as Clausewitz, Mahan, and Douhet have produced definitive works for land, sea, and air, but there is not such comparable resource for circumterrestrial space." Thomas G. Behling, Deputy Under Secretary of Defense (Preparation and Warning), "Space

- Power Theory Terms of Reference," enclosure to memorandum to President, National Defense University, February 13, 2006, Subject: Space Power Theory, 1.
2. Perhaps the most apposite example of this contrast is the difference between French and German military concepts in the years between World Wars I and II and the resultant campaign outcomes. On the French, see Robert Allan Doughty, *Seeds of Disaster: The Development of French Army Doctrine 1919–1939* (Hamden, CT: Archon Books, 1985); on the Germans, see James S. Corum, *The Roots of Blitzkrieg: Hans von Seeckt and German Military Reform* (Lawrence: University Press of Kansas, 1992).
 3. The argument here begins with a discussion of theory in a general sense. However, when the word *theory* is applied to the field of war, it becomes *military theory* in the classical sense of that term—that is, a systematic, codified body of propositions about the art and science of war and war preparation.
 4. *Webster's Encyclopedic Unabridged Dictionary of the English Language* (New York: Gramercy Books, 1996), 1967.
 5. Carl von Clausewitz, *On War*, ed. and trans. Michael Howard and Peter Paret (Princeton: Princeton University Press, 1989), 75.
 6. *Ibid.*, 87.
 7. Perhaps the most spirited assault on Clausewitz's notion that war is an extension of politics is found in John Keegan, *A History of Warfare* (New York: Alfred A. Knopf, 1993), 3–60. For an equally spirited rejoinder, see Christopher Bassford, "John Keegan and the Grand Tradition of Trashing Clausewitz: A Polemic," *War in History* 1 (November 1994), 319–336.
 8. Clausewitz, 128.
 9. *Ibid.*, 611–637.
 10. For a fascinating description of how Copernicus developed his new view of the universe, see Thomas S. Kuhn, *The Copernican Revolution: Planetary Astronomy in the Development of Western Thought* (1957; reprint, Cambridge: Harvard University Press, 1999), 134–184.
 11. The roots and early study of operational art are succinctly described in David M. Glantz, *Soviet Military Operational Art: In Pursuit of Deep Battle* (London: Frank Cass, 1991), 17–38.
 12. Alfred Thayer Mahan, *The Influence of Sea Power upon History, 1660–1783*, 12th ed. (Boston: Little, Brown, 1918), 25.
 13. *Ibid.*, 29–89. Mahan's factors include a country's geographical position, physical conformation, extent of territory, size of population, national character, and the character of its government.
 14. Albert Einstein's lead essay in the collection *Science et Synthèse* (Paris: Gallimard, 1967), 28, cited in Gerald Holton, *Thematic Origins of Scientific Thought: Kepler to Einstein* (Cambridge: Harvard University Press, 1980), 357.
 15. The MacTutor History of Mathematics Archive, "Mathematical Discovery of Planets," available at <www.gap.dcs.st-and.ac.uk/~history/HistTopics/Neptune_and_Pluto.html>.
 16. Mikhail Tukhachevskii, "The Red Army's New (1936) Field Service Regulations," in Richard Simpkin, *Deep Battle: The Brainchild of Marshal Tukhachevskii* (London: Brassey's Defence Publishers, 1987), 170.
 17. Michael Howard, "Military Science in an Age of Peace," *Journal of the Royal United Services Institute for Defence Studies* 119 (March 1974), 7.
 18. Clausewitz's unfinished note, presumably written in 1830; Clausewitz, *On War*, 70.
 19. Mahan, 9.
 20. Julian S. Corbett, *Some Principles of Maritime Strategy*, introduction and notes by Eric J. Grove (1911; reprint, Annapolis, MD: Naval Institute Press, 1988), 15–51.
 21. Clausewitz, 134–136; Corbett, 107–152; J.F.C. Fuller, *The Foundations of the Science of War* (London: Hutchinson, 1926), 19–47.
 22. Holton attempts to capture the essential qualities of scientific genius in *Thematic Origins of Scientific Thought*, 353–380. His major focus in this investigation is the genius's ability to work in the mental realm of apparent opposites. Although I am not equating the ability to formulate theory with genius, I am arguing that such formulation requires many of the same qualities that Holton describes.
 23. "War is a matter of vital importance to the State; the province of life or death; the road to survival or ruin. It is mandatory that it be thoroughly studied." Sun Tzu, *The Art of War*, trans. Samuel B. Griffith (New York: Oxford University Press, 1963), 63; "War is not pastime; it is no mere joy in

- daring and winning, no place for irresponsible enthusiasts. It is a serious means to a serious end," Clausewitz, 86.
24. Clausewitz, 140. In the Paret-Howard translation, the phrase reads, "A Positive Doctrine is Unattainable." The text comes from a subchapter heading, "*Eine positive Lehre ist unmöglich.*" Carl von Clausewitz, *Vom Kriege*, 19th ed., ed. Werner Hahlweg (Bonn: Ferd. Dümmlers Verlag, 1991), 289. The rendering of the German *Lehre* as doctrine is certainly acceptable. However, in light of the very specific military connotation that the term doctrine has developed since the early 1970s as being officially sanctioned principles that guide the actions of armed forces, I have chosen to render *Lehre* as the somewhat more general term teaching.
 25. Clausewitz, *On War*, 140.
 26. *Ibid.*, 141.
 27. *Ibid.*, 145.
 28. *Ibid.*, 146–147.
 29. Carl Becker, "Everyman His Own Historian," *American Historical Review* XXXVII (January 1932), 221–236; reprinted in Carl L. Becker, *Everyman His Own Historian: Essays on History and Politics* (New York: F.S. Crofts, 1935), 233–255.
 30. Baron Antoine Henri de Jomini, *The Art of War*, trans. G.H. Mendell and W.P. Craighill (1862; reprint, Westport, CT: Greenwood Press, 1971), 321.
 31. *Ibid.*, 323.
 32. Clausewitz, *On War*, 89. Clausewitz's description of the three elements provides a strong indication of his lack of dogmatism: "These three tendencies are like three different codes of law, deep-rooted in their subject and yet variable in their relationship to one another. A theory that ignores any one of them or seeks to fix an arbitrary relationship between them would conflict with reality to such an extent that for this reason alone it would be totally useless."
 33. Jomini, 322. The maxims themselves are found on page 70.
 34. The derivation of these nine principles is laid out in Fuller, 208–229. Fuller named them Direction, Concentration, Distribution, Determination, Surprise, Endurance, Mobility, Offensive Action, and Security. The U.S. Air Force's current list of principles of war includes Unity of Command, Objective, Offensive, Mass, Maneuver, Economy of Force, Security, Surprise, and Simplicity. *Air Force Basic Doctrine: AF Doctrine Document 1*, November 17, 2003, 19–26, available at <www.dtic.mil/doctrine/jel/service_pubs/afdd1.pdf>. Contemporary joint doctrine contains precisely the same list of the principles of war as the Air Force's but adds three "Other Principles": Restraint, Perseverance, and Legitimacy. Joint Publication 3–0, Joint Operations, September 17, 2006, II–2, available at <www.dtic.mil/doctrine/jel/new_pubs/jp3_0.pdf>.
 35. Jomini, 16–39. The chapter is titled "The Relation of Diplomacy to War."
 36. Clausewitz, *On War*, 97.
 37. Henry M. Wriston, foreword to Henry E. Eccles, *Logistics in the National Defense* (1959; reprint, Washington, DC: Headquarters, United States Marine Corps, 1989), vii.
 38. J.C. Wylie, *Military Strategy: A General Theory of Power Control* (1967; reprint, Annapolis, MD: Naval Institute Press, n.d.), 31.
 39. For DePuy's pivotal role in the formulation of the 1976 edition of FM 100–5 and the reaction thereto, see Romie L. Brownlee and William J. Mullen III, *Changing an Army: An Oral History of General William E. DePuy, USA Retired* (Carlisle Barracks, PA: United States Military History Institute, n.d.), 187–189, and John L. Romjue, *From Active Defense to AirLand Battle: The Development of Army Doctrine 1973–1982* (Fort Monroe, VA: United States Army Training and Doctrine Command, 1984), 3–21.
 40. Department of the Army, Field Manual 100–5, Operations (Washington, DC: Department of the Army, 1982), 1–1, 1–4, 2–1, and 11–1.
 41. *Ibid.*, 2–1, 2–8.
 42. *Ibid.*, 7–13 through 7–17.
 43. *Ibid.*, 2–3.
 44. Department of the Army, Field Manual 100–5, *Operations* (Washington, DC: Department of the Army, 1986), 10.
 45. Clausewitz, *On War*, 76. This definition, as the drafters of the manual were well aware, was much more conceptual than Jomini's description of strategy as "the art of making war upon the map." Jomini, *Art of War*, 69.

46. Interview with Professor Dennis M. Drew, School of Advanced Air and Space Studies, March 11, 2004. In addition to an extremely detailed history of U.S. Air Force operations in the Korean War, Futrell produced a two-volume compilation titled *Ideas, Concepts, Doctrine: Basic Thinking in the United States Air Force* (Maxwell Air Force Base, AL: Air University Press, 1989).
47. Department of the Air Force, Air Force Manual 1-1, *Basic Aerospace Doctrine of the United States Air Force*, 2 vols. (Washington, DC: Department of the Air Force, 1992), 1:v.
48. For a detailed assessment of this groundbreaking work, see Harold R. Winton, "Reflections on the Air Force's New Manual," *Military Review* 72 (November 1992), 20-31.
49. Air Force Manual 1-1, 2:i.
50. *Ibid.*, 1:1-2.
51. *Ibid.*, 1:9.
52. *Ibid.*, 1:12.
53. *Ibid.*, 1:15-16.
54. The subsequent statement of Air Force basic doctrine, published in 1997, reverted to the traditional format. See Department of the Air Force, Air Force Doctrine Document 1, *Air Force Basic Doctrine* (Maxwell Air Force Base, AL: Headquarters, Air Force Doctrine Center, 1997).