Marines patrol in Garmsir district of Helmand Province, Afghanistan

On Military Theory

By MILAN VEGO

All too often, the critical importance of military theory either is not well understood or is completely ignored by many officers. A reason for this is their apparent lack of knowledge and understanding of the relationship between theory and practice and the real purpose of military theory. Many officers are also contemptuous of theory because they overemphasize the importance of technology.[1]

U.S. Marine Corps (Colby Brown)

DOD

General Dwight D. Eisenhower and General "Hap" Arnold discuss Allied progress during World War II

What Is Military Theory?

In generic terms, a *theory* can be described as a coherent group of general propositions used to explain a given class or phenomenon.[2] It is a precise consideration of a subject to obtain fundamental knowledge. It is the teaching of the truth or development of the truth of a subject.[3] In the scientific sense, a theory does not need to be supported or contradicted by evidence. In addition, it does not necessarily mean that the scientific community accepts a given theory.[4]

In the broad definition of the term, *military theory* can be described as a comprehensive analysis of all the aspects of warfare, its patterns and inner structure, and the mutual relationships of its various components/elements. It also encapsulates political, economic, and social relationships within a society and among the societies that create a conflict and lead to a war. Sound military theory explains how to conduct and win a war. It also includes the use of military force to prevent the outbreak of war.[5]

Military theories are differentiated according to their purpose and scope. General theories of war deal with war as a whole, regardless of purpose and scale. There are also military theories focused on specific types of hostilities and the use of military force such as insurgency and counterinsurgency, terrorism, support of foreign policy, and peace operations. Theories of land, naval, and air warfare are intended to explain the nature, character, and characteristics of war in each physical medium. Theories of military art and of strategy, operational warfare (or operational art), and tactics are focused on explaining, respectively, the methods, planning, preparation, and execution of actions aimed to accomplish military objectives. Each of these theories also describes the inner structure and mutual relationships of the elements of warfare in the respective fields of study. In addition, they have to describe a larger strategic or operational framework.

Clausewitz recognized that every age had its own kind of war.[6] A new theory of war emerges as a result of a combination of drastic changes in the international security environment, diplomacy, domestic politics, ideology, economics, and revolutionary advances in technology. For example, a new theory of war was developed in the aftermath of the French Revolution and the Napoleonic Wars, World War I, and World War II.

Dr. Milan Vego is Professor of Operations in the Joint Military Operations Department at the Naval War College.

Purpose and Importance

Carl von Clausewitz wrote that the primary aim of any theory is to clarify concepts and ideas that have become confused and entangled. Only after terms and concepts have been defined can one hope to make any progress in examining a question clearly and simply and expect the reader to share one's view.[7] Clausewitz believed that the main purpose of theory is to cast a steady light on all phenomena. It should show how one thing is related to another and keep important and unimportant elements separate.[8]

The purpose of theory is not to provide rules and regulations for action—to prescribe a certain road that an officer should follow.[9] Military theory should develop a way of thinking rather than prescribe rules of war. Clausewitz wrote that military theory is most valuable when it is used to analyze and critically assess all the components and elements of warfare. It then becomes a guide for anyone who wants to read about war. Theory prevents one from having to start fresh each time, plowing through material and then sorting out the pertinent details.[10]

A sound military theory is essential both for an understanding of past wars and for the successful conduct of a future war.[11] It provides the badly needed broader and deeper framework for understanding the entire spectrum of warfare. The lack of an accepted body of theory leaves a void in the basic philosophy that should guide people in distinguishing between cause and effect, trivial and important, and peripheral and central.[12] Even an imperfect or incomplete theory can clarify many obscure matters.[13] Military theory deepens and clarifies one's understanding of various concepts and ideas on the conduct of war. It serves as a guide in obtaining proper understanding of warfare in all its aspects. One of the most important practical values of a sound military theory is to assist a capable officer in acquiring a

military theory is most valuable when it is used to analyze and critically assess all the components and elements of warfare

broader outlook of all aspects of warfare. The commander armed with solid theoretical knowledge would have a firmer grasp of the sudden change of a situation and could act with greater certainty and quickness to obtain an advantage over the opponent than the commander who lacks that knowledge. Another value of having a sound military theory is that it provides major input to a valid tactical and service-wide doctrine. At the same time, a comprehensive knowledge and understanding of military theory should help an officer to appreciate strengths and weakness of military doctrine.

Science-Philosophy-Military Theory Nexus

In the past, military theories were usually based on the dominant science of the age in which a military theoretician lived. This is not necessarily the case in the modern era because of the proliferation of various scientific theories and their interpretation by many philosophers. Some of the new sciences and philosophies are based on dubious premises or are in fact pseudosciences.

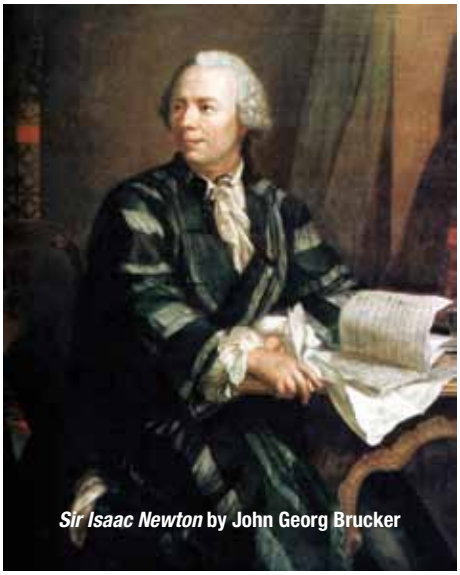
Modern military theory was heavily influenced by empiricism and determinism. *Empiricism* is described as a logical process based on pursuing knowledge through observation and experiments. One can make sensible, if restricted, deductions and then check them by reference to observed facts. This, in turn, puts great emphasis on observation and historical study.[14] *Determinism* requires that events occur in accordance to some fundamental laws (that is, predictable). There is overwhelming evidence that the universe is in fact determined. Yet the course of war and its outcome are by no means predetermined. One cannot realistically search for and find certainty in a war. Hence, any philosophy based on determinism is of limited value in the conduct of war.[15]

The two main scientific methods are inductivism and deductivism. *Inductivism* is described as a method of reasoning by which one proceeds from specific observations to make general conclusions. The main idea behind *deductivism* is to proceed from the general to the specific. Theory is developed by deductively testing data. Sir Isaac Newton was the first to use both inductivism and deductivism as scientific methods. For Newton, one started with a hypothesis and then deduced what one would expect to find in the empirical world because of that hypothesis—hence the name *hypothetical deductivism*. This method requires rigorous proof because one cannot be sure that all data were examined. There is always the possibility that an observation could conflict with a known scientific law. Every theory has an infinite number of expected empirical outcomes. Not all of them can be tested. But even if a theory can be proven to some extent by empirical data, it can never be conclusively confirmed.[16]

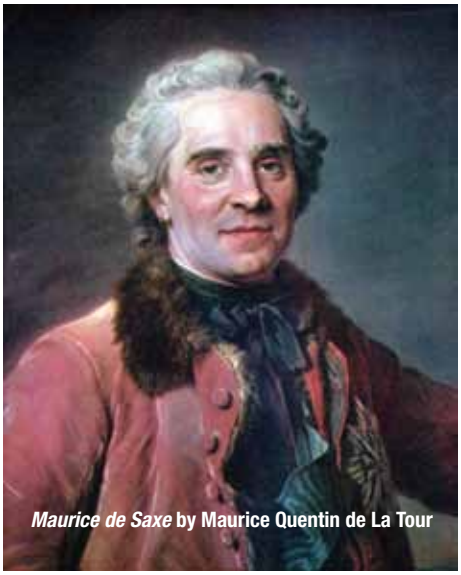
The ideas of military theoreticians have never developed in a vacuum but rather have been products of a complex interplay of the scientific, philosophical, and social influences of a given era. The ideas of military theoreticians are also affected by major political and military events of their eras. For example, Henri Antoine de Jomini was influenced by Newtonian scientific ideas in developing his theory of war.[17] He believed that war, like other fields of nature and human activity, was susceptible to a comprehensive and systematic theoretical study. Jomini argued that war in part could be reduced to rules and principles of universal validity and possibly even mathematical certainty for which Newtonian mechanics set the example. Yet he also recognized that like art, war is also partly in flux, constantly changing, dependent on circumstances, affected by unforeseen and incalculable events, and always requiring application through the general genius.[18]

To understand Clausewitz's theory of war, it is necessary to examine significant political and military events of his era and philosophical and scientific debates of the early 19th century.[19] Philosophical trends of the era of Enlightenment shaped the ideas of Clausewitz.[20] He was also influenced by the French Revolution and the Napoleonic Wars.[21] Clausewitz was especially influenced by the ideas of the German Romantic Movement embodied in Immanuel Kant.[22]

J.F.C. Fuller was greatly influenced by well-known philosopher and Darwinian Herbert Spencer. He wrote *The Foundations of the Science of War* and *The Reformation of War* in response to what he saw as a failure of military theory in World War I.[23] Spencer's vision of an orderly, deterministic universe led Fuller to think that war is a



Sir Isaac Newton by John Georg Brucker



Maurice de Saxe by Maurice Quentin de La Tour

Gerhard Johann von Scharnhorst by Friedrich Bury

complexity is caused not by the number of parts within a system but by the interactive and dynamic nature of the system

science. Consequently, there must be certain laws or principles of war, just as there are laws of chemistry, physics, and psychology.[24]

Methods developed by Sir Francis Bacon and Newton were used in science for about 300 years.[25] The Newtonian science dominated Western civilization both as a framework for scientific investigation and as an idea that the universe was ordered, mechanistic, and predictable. Two major scientific developments in the early 20th century were Albert Einstein's theories of relativity and quantum mechanics, which was developed by a group of young European physicists led by the Danish physicist Niels Bohr. These new developments replaced the Newtonian idea of cause and effect with a world of probability and trend. They showed that our understanding of the universe will always be incomplete and tenuous.[26]

The theories of relativity and quantum physics had major influences on the development of modern military theory. Both redefined the factors of time, space, matter, and force. Quantum mechanics has shown that uncertainty cannot be eliminated but only managed by observation. In contrast to the Newtonian science where repeated observations have to be made to reduce uncertainty, quantum mechanics requires multiple observations within short spans of time to reduce uncertainty to the smallest possible level. The theory of relativity implies that multiple observations must be compared with each other to obtain a better understanding of the phenomena.[27]

Systems theory was developed in the early 20th century in response to the supposed inadequacies of Newtonian science in the new era.[28] A system[29] exists when a set of elements is interconnected so that changes in one element or its relationship with others result in changes elsewhere, and the entire system exhibits properties and behaviors different from the parts.[30] The main types of systems are open and closed. An open system continuously interacts with its environment. Depending on the type of system, these interactions can be in the form of material transfers, energy, or information. The opposite of the open system is the closed or isolated system. Systems can be dynamic or nondynamic. A dynamic system exhibits a change in response over time due to input, force, information, or energy. A dynamic system can be conservative or dissipative. A conservative dynamic system does not lose energy from friction, while a dissipative dynamic system does.[31]

Since the 1960s, complexity theory has gradually emerged. Its supposed aim is to unify aspects of the universe that escaped due to both Newtonian science and quantum mechanics. Complexity theory describes the behavior of complex adaptive systems.[32] Its roots are systems theory and so-called chaos theory.[33] A complex system is any system composed of numerous parts or agents, each of which must act individually according to its own circumstances and requirements, but which by so acting has a global effect, which simultaneously changes the circumstances and requirements affecting all other agents. Complexity is caused not by the number of parts within a system but by the interactive and dynamic nature of the system.[34] Complexity theory explains why certain complex adaptive systems that appear to operate close to the realm of chaos are not chaotic and why the second law of thermodynamics did not appear to apply to biology.[35]

Since the mid-1990s, the systems (or systemic) approach to warfare emerged as the dominant school of thought in the U.S. military, the North Atlantic Treaty Organization, and most other Western militaries. This was exemplified by the wide and almost uncritical acceptance, by not only the U.S. but also other militaries, of numerous proponents' claims of the supposedly enormous benefits of adopting network-centric warfare (NCW), effects-based operations (EBO), systemic operational design (SOD), and its most recent evolution, design.

Despite the claims to the contrary by systems proponents, Clausewitz was not a proponent of the systems approach to warfare—just the opposite. In *On War*, he wrote:

Efforts were therefore made to equip the conduct of war with principles, rules, or even systems [emphasis added]. *This did present a positive purpose, but people failed to take an adequate account of the endless complexities involved. As we have seen the conduct of war branches out in almost all directions and has no definite limits; while any system, any model has the finite nature of a synthesis. An irreconcilable conflict exists between this type of theory and actual practice. . . .* [These attempts] *aim at fixed values but in war everything is uncertain and calculations have to be made with variable quantities. They direct the inquiry exclusively toward physical quantities, whereas all military action is entwined with psychological forces and effects. They consider only unilateral action, whereas war consists of continuous interaction of opposites. Thus, an irreconcilable conflict exists between this type of theory and actual practice.*[36]

The Process

The reality of war is a starting point for the development of a military theory. Practice, in turn, puts military theory under a searching examination.[37] Prussian General Gerhard von Scharnhorst said that the theory of scientific evaluation should be based on experiences. He highlighted the mutual relationship between theory and practice. For him, there was no progress by just having bland experiences without theoretical education and analysis.[38] The process of developing a military theory is usually very long. It sometimes takes decades or even longer before a general consensus is reached about changes in the character of war. Some of the strongest and most enduring influences in creating a new theory of war are the works of military theoreticians, as the examples of Clausewitz, Jomini, J.F.C. Fuller, B.H. Liddell Hart, Aleksandr A. Svechin, Alfred T. Mahan, Julian S. Corbett, Raul Castex, Giulio Douhet, and William "Billy" Mitchell illustrate.

Clausewitz wrote that in the process of developing military theory, war has to be divided into related activities. Combat is essentially the expression of hostile feelings. In addition, large-scale combat is a war where hostile feelings often become hostile intentions. Modern wars are seldom fought without hatred between nations. Hence, theory becomes infinitely more difficult as soon as it touches the realm of moral values.[39] In general, the more physical the activity in a war, the less difficulty there will be in developing a theory. The more activity becomes intellectual and turns into motives that exercise a determining influence on the

U.S. commander and Iraqi police chief discuss joint operation between Department of Border Enforcement and Iraqi army at the regional level, Basra, Iraq, October 2010

U.S. Army (James Benjamin)

commander, the more difficult developing a sound theory becomes.[40] A clear distinction should be made between what is important and what is unimportant or even trivial.

The history of warfare is the very foundation of military theory. Military/naval history is inherently broader, deeper, and more diverse than the study of any other area of human activity.[41] It encompasses every aspect of the experience of humanity.[42] Its value transcends national, ethnic, or religious boundaries. It is the record of universal experience.[43] Historical events are an integral part of complex and highly dynamic interrelationships between humans and machines of war. History does not and cannot predict the future. However, it can teach us not to repeat the errors and blunders of our predecessors.

When developing a military theory, as many wars, campaigns, and major operations as possible should be studied. Despite the passage of time, there are lessons to be identified or learned by studying wars of the ancient era. Obviously, the most valuable area of studies is wars in the modern era. Yet recent wars should be studied with a great deal of caution because most of the pertinent information is lacking. Also, it takes some time to evaluate recent events in a proper light. Not only military, but also political, diplomatic, economic, and social history should be studied as well. Wars are never fought in a vacuum but are an integral part of the general history of an era.

Study of military/naval history is barren and lifeless without the use of historical examples. Theoretical discussion is easily misunderstood or not understood at all without the use of empirical evidence. A certain aspect of military theory is derived from the analysis of many wars, campaigns, and major operations. Then, selected examples should be used to clarify or illustrate that particular aspect of war. Historical examples can be used as an explanation or application of an idea or to support a certain theoretical statement or construct.[44] A historical example provides the broader context in which an event occurred.

There are also dangers in selectively using examples from military history. Sources for a particular example might be misleading or even utterly false. Clausewitz warned that improper use of historical examples by theorists normally not only

theoretical discussion is easily misunderstood or not understood at all without the use of empirical evidence

leaves the reader dissatisfied but even insults his intelligence.[45] German general and theoretician Hans Bronsart von Schellendorf observed that it is well known that "military history, when superficially studied, will furnish arguments in support of any theory or opinion."[46]

The study of military history would be incomplete if not accompanied by deduction of the lessons learned. In terms of their scale and importance, lessons learned can be technological, tactical, operational, and strategic. Technological lessons are derived from the use of weapons and sensors and their platforms and equipment. They have great value in improving existing or designing new weapons, sensors, and equipment. Tactical lessons are derived from the study of planning, preparing, and executing battles, engagements, strikes, and other tactical actions. In contrast, operational lessons are deduced from a thorough study of all aspects of major operations and campaigns. Strategic lessons are learned from the comprehensive study and analysis of a war as a whole and its political, diplomatic, military, economic, informational, and other aspects.

The higher the level of war, the greater the importance of the lessons learned or mislearned. Also, the higher the level, the longer the value of the lessons. Hence, operational lessons are by their nature more durable than tactical lessons. Likewise, strategic lessons last longer than operational or tactical lessons. Lessons on intangible aspects of warfare are generally more durable than lessons derived from the physical aspects of a given situation. War is a clash of human will; hence, the human element is a critical part of it and will remain so in the future. Therefore, lessons pertaining to leadership, doctrine, unit cohesion, morale and discipline, and training are essentially timeless. In contrast, technological lessons are by their very nature short term. Lessons learned are interrelated. For example, tactical lessons learned greatly influence the theory and practice of operational art, while operational lessons affect the theory and practice of strategy and even policy.

By conducting a comprehensive analysis of past wars, it is possible to construct some hypotheses about future war.[47] They could be sound or partially or even completely false.[48] Hence, they should be tested in exercises/maneuvers and wargames in peacetime and, if necessary, modified or abandoned. Very often, the main reason for an erroneous vision of the character and duration of a future war was ignoring or mislearning the lessons of more recent wars. For example, in the years preceding the outbreak of World War I, the German military focused almost exclusively on studying and deriving lessons from the Franco-Prussian War of 1870–1871. The Germans believed that any future war would be a war of movement and therefore decisive and short. The Germans believed that the planned campaign against France would last no more than 8 to 10 weeks and the war would end in 4 to 6 months.[49] As it turned out, the war went on for over 4 years, with horrendous losses of personnel and materiel on both sides. The French military likewise failed to correctly anticipate the character of the future war in the years preceding August 1914. The prevalent French view was that a future war would be short and that maneuvering would play the predominant part; it would be a war of movement.[50]

During the 1930s, the French and British mistakenly believed that the next war would be a positional war, as World War I had been. Thus, in contrast to the Germans, they failed to prepare for a war of movement. In retrospect, the French vision of the future war was deeply flawed because it was based on three false readings of military developments at the time: the exaggerated destructiveness of firepower, the dominant role of defense, and the superiority of the so-called methodical battle.[51]

Content

The main components of military theory include the nature and character of modern war and its elements and how these elements are related to and interact with each other. A sound military theory should encompass not only military but also nonmilitary aspects that affect preparation for and conduct of war.[52] A general theory of war should analyze the impact of social factors on the conduct of war, specifically ideology, science, and technology.[53] It should encompass broad description of nonmilitary elements of power.[54] It should link war with other constituent parts of society. In relative terms, nonmilitary elements of power should play a larger role in developing theories of insurgency, counterinsurgency, and combating terrorism than in theories of high-intensity conventional war. A sound theory of war should also describe the ways and means of preventing the outbreak of war.[55]

the main components of military theory include the nature and character of modern war and its elements and how these elements are related to and interact with each other

All wars consist of features that are unchangeable or constant regardless of the era in which they are fought and those that are transitory or specific to a certain era. The first category makes up the war's "nature," while the second comprises its "character." In general, "nature of war" refers to those constant, universal, and inherent qualities that ultimately define war throughout the ages, such as the dominant role of policy and strategy, psychological factors, irrationality, violence, hatred, uncertainty, friction, fear, danger, chance, and luck.[56] In contrast, "character"[57] refers to those transitory, circumstantial, and adaptive features that account for the different periods of warfare throughout history.[58] The character of war is primarily determined by prevailing international security environment, domestic politics, and the economic, social, demographic, religious, legal, and other conditions in a certain era, and also the influence of new technological advances. In studying the character of war, the focus should be on those elements that are more durable and tend to display certain patterns. New technological advances, which are inherently ephemeral in their character, should not be used in the development of military theory. Any theory of war based predominantly on technology is bound to not be valid for too long. More important, a theory based on current technologies (such as NCW or EBO) or, even worse, future and unproven ones (for example, the French Navy's "Young School" or Giulio Douhet's theory of strategic bombing) would lack the most critical element in any sound military evidence—historical examples. The most durable military theory focuses less on the latest technology and more on the infinite complexities in its use.[59]

A military theory should consist of a coherent group of basic concepts together with a body of propositions, principles, and cause and effect relationships that generally holds true. The coherence and relationships of the theory are shown by its structure. The structure of the theory, like any structure, will appear to vary with the point of view one takes. However, if the theory is sound, then it will be logical and coherent from any vantage point. Each component of a military theory itself contains overlapping and interwoven topics and subtopics, which can be categorized, arranged, and developed in various ways. The major subjects comprise the primary and fundamental core of substantive military knowledge. Sound military theory should describe the manner in which war is related to other parts and actions of human society. It should include the nature of various forces that act throughout the whole structure and the description of the way these forces act and interact.[60]

In contrast to general military theory, a theory of land, air, or naval warfare is narrower in its scope. It should be focused predominantly on combat employment across the entire spectrum of possible conflict on land, sea, or air, but with the emphasis on the high-intensity conventional war. It should describe the nature and character of warfare in each physical medium (land, sea, and air); their mutual relationships and interactions; the role and importance of the human factor; the principal objectives of land, naval, and air warfare; and methods of combat force employment. Theories of land, naval, and air warfare should include constants derived from the study of past wars. For example, experience shows the importance of achieving surprise, using deception, and concentrating overwhelming power at a decisive place and time. It also shows that the pursuit of multiple objectives and the lack of unity of command and cooperation among combat arms or services invariably had adverse effects on the ultimate success in combat.

a military theory cannot have the same precision or consistency as a theory in the physical sciences because the means of measurement are highly uncertain

Features

A sound military theory should meet several requirements First and foremost, it should be *general* in its nature to accommodate all aspects of its subject. It should be flexible so as to allow sufficient space for further development. It should search for questions in the conduct of war but avoid giving answers to these questions. A military theory cannot have the same precision or consistency as a theory in the physical sciences because the means of measurement are highly uncertain. Controlled experiments cannot be used, and the analyses available are not always objective.[61] The reason why the theories of Sun Tzu, Machiavelli, and Clausewitz are still viable today is that they are general in character. They avoided reliance on technologies of their respective eras or embracing various pseudoscientific theories and intellectual fads. For example, Clausewitz rejected quantitative analysis and scientific formulas in favor of philosophical insights.[62] In contrast, theories developed by Jomini and Fuller proved to be much less durable. Similarly, the theory of naval strategy developed by Mahan, who was influenced by Jomini, has less validity than the theories of Corbett, who was a Clausewitzian.

Marshal de Saxe said that war has *no rules*, and Clausewitz agreed. Apparent adherence to fundamental laws was a major criticism of Jomini.[63] Clausewitz cautioned that *On War* presented material for theory but not theory itself. He avoided creating a rigid structure of thinking. Clausewitz did not want someone to think that all that was needed was to fit the evidence into the preexisting framework and thus create a theory that was "correct."[64] In his view, only general statements and principles could be made about war.[65] Clausewitz wrote that even the most realistic theory cannot match the reality. It follows that all attempts to establish rules with prescriptive power are pointless in an activity such as fighting and that military theory could never be immediately utilitarian.[66] Clausewitz argued that absolute so-called mathematical factors can never find a firm basis in military calculations. From the very start, there is an interplay of possibilities, probabilities, and luck that weaves its way throughout the length and breadth of the tapestry. In the whole range of human activities, war most closely resembles a game of cards.[67] In contrast, the leading advocates of information warfare wholeheartedly embraced the idea that war consists of a set of rules. For example, NCW advocates falsely claimed that, as supposedly was the case with earlier theories of war, network-centric warfare has competitive space, rule sets, and metrics.[68] The EBO concept relies heavily on highly suspect methodologies of predicting first- , second- , third- , and n^{th}-order effects and various metrics, such as measures of effectiveness and measures of performance to assess the effectiveness of actions by friendly forces.

Military theory must be *comprehensive*. This means that it should encompass employment of military forces in peacetime, operations short of war, and in high-intensity conventional conflicts. Military theory should be as *simple* as possible, for if it strayed from the basic factors inherent in war, it would soon become too complicated to be applied to anything but specific conditions.[69]

Optimally, a theory of war should be based on the *constants* of absolutes, not on transitory occurrences in warfare. Its structure should include a number of all-encompassing concepts that will retain their validity regardless of the context of situation and historical developments. Clausewitz scrupulously concentrated on concept rather than context. This focus has given his work timelessness.[70]

A sound military theory should be written in simple and clear military language so that it is easily understood by all, debated, and accepted. Various terms borrowed or adopted from business practices, as is the case with NCW, simply do not have a place in military theory. A major problem with SOD was the use of language from postmodern philosophers, literary theory, architecture, and psychology, which was largely unintelligible. In short, military theory that cannot be understood is worse than useless.

Theory versus Reality

Theory based on historical experiences consists of interpretations, facts, events, causes, and effects, which are then presented in a generalized form. Sound theory represents a reliable set of beliefs sustained and justified by one's understanding of the true nature of war. Good theory is the result of scientific rigor and disciplined thinking. However, the soundness of a military theory

can be most realistically tested during a war.[71] Everything else is a poor substitute and inadequate for combat experience.[72] Hence, a military theory must reflect the realities of war; otherwise, it must be modified or drastically changed to bring it in harmony with reality.

In the application of a military theory, a compromise should be made between what is ideal and what is realistically possible. However, the subject of warfare is so broad and complex that a single theoretical construct cannot explain it. The best educated and most theoretically ready commander might not actually win on the battlefield. Victory remains a matter of tactical, operational, or strategic skill, because the conduct of war is, and will remain, largely an art, not a science, as apparently too many proponents of information warfare believe.

A sound military theory is the key prerequisite for having a comprehensive and deep knowledge of all aspects of war. Its main purpose is not to provide a commander with a checklist on how to make quick and sound decisions and then skillfully execute them. Its purpose is to provide a solid knowledge and understanding of war so a commander can act swiftly and decisively in combat, especially when faced with an unforeseen situation. Knowledge of military theory is essential to understanding and then creatively applying doctrine.

Military theory is greatly affected by scientific theories of a certain era and their interpretation by leading philosophers. Since the turn of the 20th century, numerous scientific theories have emerged. They have been accompanied by a large number of diverse philosophic interpreters. Some of the new theories, such as general systems theory, are highly controversial and even pseudoscientific. Postmodern philosophy is also controversial, and it represents just one of many philosophical currents. Yet it has been adopted as a foundation of SOD and the U.S. Army's "design."

Military theory is derived from practice. Hence, from a multitude of empirical examples, certain commonalties are derived, which are then included in the body of military theory. In contrast, a theory of science such as mathematics, physics, or chemistry is based on certain hypotheses that are repeatedly tested and then eventually discarded, modified, or accepted as a theory.

The history of the conduct of war in all its aspects is the very foundation of any sound military theory. It is military/naval history that allows a theorist to select historical examples to either clarify or obtain evidence in support of a given statement or theoretical construct. Without historical examples and lessons learned, it is difficult to see how sound military theory can be developed. Another critical part of military theory is the vision of future war. A sound military theory should take fully into account the effect of current and future technologies. However, it should not be based predominantly or, even worse, exclusively on technologies. A sound military theory should be general and flexible. It should focus on the constants, not on ephemeral occurrences in the conduct of war. It should discern war's patterns. It should be all encompassing but uncomplicated and simple at the same time. It should be articulated in simple, clear, and easily understandable language. The only test of validity of a military theory is to practice war. A military theory can approach the reality of war but it cannot completely match it. It must be modified, altered, or even discarded if it is in a serious disconnect with reality. **JFQ**

NOTES

[1] Henry E. Eccles, *Military Concepts and Philosophy* (New Brunswick, NJ: Rutgers University Press, 1965), 24.

[2] *Webster's Third New International Dictionary, Unabridged* (Springfield, MA: Merriam-Webster, Inc., 1981), 666.

[3] Alfred Stenzel, *Kriegfuehrung zur See. Lehre vom Seekriege* (Hannover/Leipzig: Mahnsche Buchhandlung, 1913), 12–13.

[4] Wade A. Tisthammer, "The Nature and Philosophy of Science," 1, available at <http://angelfire.com/mn2/tisthammerw/science.html>.

[5] Eccles, *Military Concepts and Philosophy*, cited in J.P. Storr, *Human Aspects of Command* (Wiltshire, UK: Directorate General of Development and Doctrine, British Army, 2003), 3; Julian Lider, *Military Theory: Concept, Structure, Problems* (New York: St. Martin's Press, 1983), 15.

[6] Colin S. Gray, "Clausewitz, History, and the Future Strategic World," presentation at the Strategic and Combat Institute Conference *Past Futures*, Royal Military Academy, Sandhurst, July 3–4, 2003, and Marine Corps Command and Staff College, Quantico, VA, September 9–10, 2003 (Fort Leavenworth, KS: Strategic and Combat Studies Institute, Occasion Nr 47, printed in United Kingdom under arrangements of Astron Document Services, 2004), 10.

[7] Carl von Clausewitz, *On War*, ed. and trans. Michael Howard and Peter Paret (Princeton: Princeton University Press, 1984), 132.

[8] Cited in Robert P. Pellegrini, *The Links between Science, Philosophy, and Military Science: Understanding the Past, Implications for the Future* (Maxwell AFB, AL: Air University Press, August 1997), 26.

[9] Stenzel, 14.

[10] Clausewitz, 132, 141.

[11] Jehuda L. Wallach, *The Dogma of the Battle of Annihilation* (Westport, CT: Greenwood Press, 1986), 4.

[12] Eccles, *Military Concepts and Philosophy*, 22.

[13] Henry E. Eccles, "Military Theory and Education: The Need for and Nature of," *Naval War College Review* (February 1969), 72.

[14] J.P. Storr, *Human Aspects of Command* (Pewsey, Wiltshire, UK: Directorate General of Development and Doctrine, British Army, 2003), 6, 5.

[15] Ibid., 3, 6.

[16] Tisthammer.

[17] Wallach, 6–7.

[18] Cited in Patrick Kelly III, *Modern Scientific Metaphors of Warfare: Updating the Doctrinal Paradigm* (Fort Leavenworth, KS: U.S. Army Command and General Staff College, May 1993), 4.

[19] Ibid., 3.

[20] Pellegrini, 42.

[21] Kelly, 3.

[22] Pellegrini, 21.

[23] Ibid., 31, 33–34.

[24] Ibid., 34.

[25] "History of the Scientific Method," available at <www.experiment-resources.com/history-of-the-scientific-method.html>.

[26] Pellegrini, 1–2.

[27] Ibid., 50.

[28] Paul J. Blakesley, *Operational Shock and Complexity Theory* (Fort Leavenworth, KS: U.S. Army Command and General Staff College, May 2005), iii.

[29] From the Latin word *systēma*; *system* is defined as a functional group of related elements forming a complex whole; it can refer to computers, social science, planning, organization, management and business, mathematics, physics, and so forth. Steven M. Rinaldi, *Beyond the Industrial Web: Economic Synergies and Targeting Methodologies* (Maxwell AFB, AL: Air University Press, April 1995), 7–8, 10. The U.S. military defines a system as a functionally, physically, or behaviorally related group of elements that interact as a whole. Joint Warfighting Center, Joint Doctrine Series, Pamphlet 7, *Operational Implications of Effects-based Operations (EBO)* (Norfolk, VA: United States Joint Forces Command, November 2004), 2.

[30] Robert Jervis, "Complex Systems: The Role of Interactions," in *Complexity, Global Politics, and National Security*, ed. David S. Alberts and Tom Czerwinski (Washington, DC: National Defense University Press, 1997), 1.

[31] Blakesley, 24.

[32] Pellegrini, 50.

[33] Blakesley, 28.

[34] John Schmitt, "Command and (Out of) Control," in *Complexity, Global Politics, and National Security*, 6–7.

[35] Blakesley, 28.

[36] Clausewitz, 154–155.

[37] Wallach, 4.

[38] Werner Hahlweg, "Umformungen im Militaerwesen und das Verhaeltnis von Theorie und Praxis," *Wehrwissenschaftlichen Rundschau*, Nr. 4, 1969, 189.

[39] Clausewitz, 157–159.

[40] Ibid., 162.

[41] Herbert Richmond, *National Policy and Naval Strength and Other Essays* (London/New York/Toronto: Longmans, Green, 1934), 279.

[42] C.B. Mayo, "The Study of History for Naval Officers," *U.S. Naval Institute Proceedings* (November 1921), 1757.

[43] B.H. Liddell Hart, *Why Don't We Learn From History* (London: Allen & Unwin, 1944), 7.

[44] Clausewitz, 171.

[45] Ibid., 170.

[46] Cited in Jay Luvaas, "The Great Military Historians and Philosophers," in *A Guide to Use of Military History*, ed. John E. Jessup and Robert W. Coakley (Washington, DC: U.S. Army Center of Military History, 1988), 76.

[47] Storr, 4.

[48] Jacob Bronowski, *The Ascent of Man* (Boston: Little, Brown, & Company, 1974), 140, 240.

[49] Christian Mueller, "Anmerkungen zur Entwicklung von Kriegsbild und operativ-strategischem Szenario im preussisch-deutschen Heer vor dem Ersten Weltkrieg," *Militaergeschichtliche Mitteilungen* 57 (1998), 412.

[50] J.F.C. Fuller, *The Foundations of the Science of War* (London: Hutchinson, 1925), 29.

[51] Eliot A. Cohen and John Gooch, *Military Misfortunes: The Anatomy of Failure in War*, 1st ed. (New York: Vintage Books, 1991), 215.

[52] Lider, 15.

[53] Ibid., 3.

[54] Eccles, "Military Theory and Education," 74.

[55] Lider, 15.

[56] Michael Sheehan, "The Changing Character of War," in *The Globalization of World Politics: An Introduction to International Relations*, ed. John Baylis, Steve Smith, and Patricia Owens, 4th ed. (Oxford: Oxford University Press, 2007), 216.

[57] The aggregate of features and traits that form the individual nature of some person or thing; moral or ethical quality; an account of the qualities or peculiarities of a person or thing. *The Random House College Dictionary*, rev. ed. (New York: Random House, Inc., 1980), 225.

[58] Sheehan, 216.

[59] Ryan Henry and C. Edward Peartree, "Military Theory and Information Warfare," *Parameters* (Autumn 1998), 11; available at <www.carlisle.army.mil/USAWC/PARAMETERS/Articles.98autumn/henry.htm>.

[60] Eccles, *Military Concepts and Philosophy*, 28, 73–74.

[61] Eccles, "Military Theory and Education," 72.

[62] Henry and Peartree, 3.

[63] Storr, 3.

[64] Scot Robertson, *The Development of RAF Strategic Bombing Doctrine, 1919–1939* (Westport, CT: Praeger Publishers, 1995), 6.

[65] Pellegrini, 26.

[66] Peter Paret, "The Genesis of *On War*," in Carl von Clausewitz, *On War*, ed. and trans. Michael Howard and Peter Paret (New York: Everyman's Library, Alfred A. Knopf, 1993), 16.

[67] Clausewitz, 97.

[68] Director, Force Transformation, *The Implementation of Network-Centric Warfare* (Washington, DC: Office of Force Transformation, January 5, 2005), 16.

[69] Pellegrini, 23–24.

[70] David A. Fastabend, *A Theory of Conflict and Operational* Art (Fort Leavenworth, KS: U.S. Army Command and General Staff College, May 1988), 34.

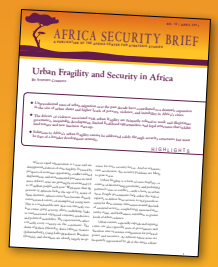
[71] Robertson, 5.

[72] Pellegrini, 21.

NDU Press

NEW from *NDU Press*

for the Africa Center for Strategic Studies



Africa Security Brief 12

Urban Fragility and Security in Africa

by Stephen Commins

Unprecedented rates of urban migration in Africa over the past decade have contributed to a dramatic increase in urban slums as well as higher poverty, violence, and instability. The drivers of violence are primarily related to weak governance, inequitable development, limited economic opportunities, and legal structures that inhibit land tenure. The author argues that solutions to Africa's urban fragility cannot be addressed through conventional security approaches, but must be part of a broader strategy that recognizes urban fragility as a development and security problem, that improves local government and accountability, that increases opportunities for the unemployed to earn a livelihood, and that reforms legal structures to enable the urban poor to gain land tenure and a stake in society.

Forging Partnerships for Africa's Future

The Africa Center offers a variety of resources that keep readers abreast of the Africa-related news and research published on this site.

http://africacenter.org/

To subscribe to Africa Center's Daily Media Review and/or Africa Security Briefs, go to http://africacenter.org/subscribe/, enter email address, check the box next to the name of the newsletter(s) desired, and click the "Submit" button.

Visit the NDU Press Web site for more information on publications at ndupress.ndu.edu