

# THE ART AND SCIENCE OF TACTICS

by

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**E**stablishing the nature of tactics has been a pastime of professional soldiers for centuries. Analyses of tactics have delved into the question of the exact nature of tactics; they have included examinations of historical experience or events in war; and they have sought to find the best possible tactics for the future battlefield. In recent decades, studies of tactics in the US Army have implicitly begun to assume that tactics is more an exact science than an "art and science." As one recent military writer explained, tactics is nothing more than the "specific plans and actions required to activate a concept."<sup>1</sup> In fact, tactics remains rooted in concepts that demand the scientific approach, but the application of these concepts requires an intuitive art for the successful disposition and concentration of force on the field of battle. Despite the improving capabilities of modern weaponry, the success of a tactician remains dependent upon a variety of factors which cannot be ordered or approached strictly as if war were a technical trade.

## VIEWS FROM THE PAST

Military writers of the 18th and 19th centuries generally agreed that tactics was more an art than it was a science. Many agreed with the terse definition given by Antoine Henri Jomini: "Tactics is the art of fighting on the ground."<sup>2</sup> Early 19th century writers also often used the concepts of Karl von Clausewitz to support their arguments, even though he believed war was neither an art nor a science.<sup>3</sup> They often referred to the complexity and uncertainty of war, which was sometimes called the "friction" or the

"fog" of war. Clausewitz had described this complexity:

Everything in war is very simple, but the simplest thing is difficult. The difficulties accumulate and end by producing a friction that is inconceivable unless one has experienced war. . . . Friction is the only concept that more or less corresponds to the facts that distinguish real war from war on paper.<sup>4</sup>

Another characteristic of war which supposedly made it an art was its human participants. Clausewitz explained, "In war the will is directed at an animate object that reacts."<sup>5</sup> According to many early military observers, it was this friction and these human participants which made war more an art than a science, for events on the battlefield could not be predicted or studied in isolation.

Military writers continued to emphasize these characteristics through the 20th century, and in 1947 Lieutenant Colonel Alfred H. Burne wrote, "War is an art rather than a science; it is waged between human beings, and involves the interplay of their respective characters. Science does not recognize sentient beings as such."<sup>6</sup> Thus, the friction of war and the animate nature of the participants made war more an art than a science.

Many military observers, however, recognized that war demanded increasingly greater scientific expertise and that therefore war was not solely an art. For example, the science of ballistics, the logic of military organizations, and the systems for procuring and delivering supplies required long training and detailed study. Success on the battlefield

was increasingly as dependent upon the knowledge acquired before the battle as it was dependent upon actions in the battle. Early military observers acknowledged this. In the mid-18th century Maurice de Saxe used an allegory to explain the need for detailed knowledge:

A man who has a talent for architecture and can design, will draw the plan and perspective of a palace with great skill. But . . . if he does not know how to shape his stones, to lay his foundation, the whole edifice will soon crash.<sup>7</sup>

As the 19th century progressed, an increasing number of military men came to believe that science could serve the needs of the tactician. One of the major reasons for this was the scientific revolution which accelerated in the latter half of that century. Another was the military revolution which occurred in the same period. Armies vastly increased in size; progressively more complex weaponry was introduced; and logistics trains became massive. As warfare became more complex, a more systematic approach became necessary.

One of the most important innovators during this period was Field Marshal Helmuth von Moltke, Chief of the German General Staff from 1857 to 1888. He recognized that war was not an exact science and argued:

It is a matter of understanding a constantly changing situation at every moment, and then doing the simplest and most natural thing with energy and determination. This is what makes war an art, an art that is served by many sciences.<sup>8</sup>

Von Moltke's great contribution to military thought was his recognition that war could be "served by many sciences," and the development of this idea made him virtually the father of the modern staff system. Von Moltke believed that even though war was ultimately an art, the military commander could be served by the systematic application of general principles, rigorous research, and

meticulous planning. Under his intellectual and personal guidance, the German General Staff system became the model for every Western state.

The principles of war, as they were articulated in the early 20th century, were an attempt to bridge this gap between war as an art and war as a science. According to J. F. C. Fuller, the major architect of the modern principles of war, the great value of principles came in teaching the art of war and in rendering order to seemingly disparate actions on the battlefield. Only the most extreme supporters of the scientific approach argued that principles must be followed on the battlefield and that violating them would invariably result in defeat. More reflective officers recognized that principles were a tool for understanding the dynamics of the battlefield but that they could not be indiscriminately applied. At the same time, they could be used to train officers to think, since they were a useful mechanism for keeping basic ideas fresh in one's mind. The principles were thus scientific in nature, and Fuller explained, "Lack of science leads to chaos in art."<sup>9</sup>

In the 1920's and 1930's, Western observers stressed the scientific aspects of war, but they did not abandon the belief that war was ultimately an art. In his book, *The Foundations of the Science of War*, Fuller passionately argued:

To deny a science of war and then to theorize on war as an art is pure military alchemy, a process of reasoning which for thousands of years has blinded the soldier to the realities of war, and will continue to blind him until he creates a science of war upon which to base his art.<sup>10</sup>

Fuller believed that even though soldiers were "artists of war," they should spend most of their lives systematically preparing for war. A scientific approach to preparation would be a rational process in which the tactician would train his mind for the eventualities of the battlefield. In the same sense, B. H. Liddell Hart wrote articles on "A Science of

Infantry Tactics” in which he did not envision an exact science of tactics but sought to identify the “essential principles of tactics” which could be applied to the conduct of war. He sought to provide a “flexible framework” that could provide the tactician a base upon which to build his “practical knowledge of ground and weapons.”<sup>11</sup> Neither Fuller nor Liddell Hart believed that military science encompassed immutable, inviolable laws which had to be applied automatically; however, a thorough scientific preparation would enhance chances of success amidst the turmoil of battle.

The American Army has long sought to use scientific methods for solving tactical problems, but its methods have often been more “quasi-scientific” than scientific. As with Liddell Hart, the flexible framework has usually been balanced by practical knowledge. For example, the five-paragraph field order was introduced into the Army at Fort Leavenworth in 1894-95 by Captain Eben Swift, who was seeking a more systematic method to examine tactical problems.<sup>12</sup> Previously, commanders had either prescribed missions in voluminous detail, or they had merely pointed out the objective, leaving the execution entirely to the judgment of the subordinate. The new operations order permitted the orderly arrangement of information and instructions, and it enabled the commanders of all units to understand clearly their mission, force composition, and responsibilities. The operations order was thus introduced to permit a more systematic approach to tactical problems.

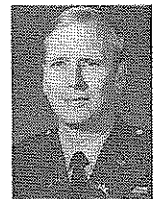
**S**ystematic methods and thinking have remained an important part of the American military officer’s preparation for war. Since the latter part of the 19th century, Army schools have consistently pushed the student officer toward a recognition of the capabilities and composition of military organizations, a grasp of the fundamentals of employing the widely varying types of modern military units, and an understanding of tactical techniques and procedures. The schools have never supported haphazard planning or guesswork. They have

always recognized that tactics demands a rigorous study of the facts, the systematic arrangement of knowledge, and the reaching of responses through reasoning rather than conjecture. The reasoning process which emphasizes logical deduction and the study of precedents was an inherent and integral part of the intellectual preparation of any officer, but “military science” was not a field in which there were formulas such as those provided for the engineer or mathematician.

The American philosophy of tactics has never been more succinctly expressed than when General John J. Pershing, Commander of the American Expeditionary Forces in World War I, spoke to the officers of the 1st Division just before they entered combat for the first time:

Whatever your previous instruction may have been, you must learn in the actual experience of war, the practical application of the tactical principles that you have been taught during your preliminary training. . . . When confronted with a new situation, do not try to recall examples given in any particular book on the subject; do not try to remember what your instructor has said in discussing some special problem; do not try to carry in your minds patterns of particular exercises or battles, thinking they will fit new cases, because

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no two sets of circumstances are alike. . . . The main reliance after all must be upon your determination, upon the aggressiveness of your men, upon their stamina, upon their character, and upon their will to win.<sup>13</sup>

In subsequent decades, the American Army did not abandon its belief that being a successful tactician was also an art. The theory of tactical operations could be based upon scientific methods encompassing principles, concepts, and techniques, but military execution was undoubtedly an art relying upon the commander's insight and leadership. The execution of tactical operations required an intuitive synthesis of all factors that might impact upon the battle. Doctrine provided the flexible framework for the commander's concept; scientific methods were used to examine and order information; but, the decision would depend upon his practical knowledge of the ongoing battle. Thus, to borrow von Moltke's idea, tactics was an art, served by many sciences.

#### **THE NEED FOR THE CREATIVE OFFICER**

When one examines the evidence of the past, it becomes clear that while technology has always acted to transform the nature of war, it has never altered the one unchanging fundamental of war—its variety and complexity. The theoretical impact of this was indicated in the book, *Infantry in Battle*:

The art of war has no traffic with rules, for the infinitely varied circumstances and conditions of combat never produce exactly the same situation twice. . . . In battle, each situation is unique and must be solved on its own merit.<sup>14</sup>

Tactical success will come to the commander who displays the greatest resourcefulness, initiative, and creativity when he carries out a combat mission, not to the commander who slavishly applies rigid theories and rules memorized in some classroom. J. F. C. Fuller once remarked, "It

is [often] not recognized that the object of regulations and rules is to produce order in the fighting machine, and not to strangle the mind of the man who controls it."<sup>15</sup> The officer must, above all, be a leader and a problem-solver, and the application of theory to practice on the modern battlefield requires him to treat tactics as if it were a science and an art, not as if it were a technical skill.

The unpredictable nature of battle compels the military officer to remain flexible and to develop his mental capabilities to their utmost. The American experience in war in the 20th century supports this need for the flexible, mentally creative military officer, since in this century the Army has not used its peacetime tactical doctrine in war. When World War I began, we were not prepared for the machineguns, the barbed wire, or the reality of the trenches. When France fell in June 1940, the United States had only 18 medium tanks. When the Korean incident erupted in 1950, we were woefully unprepared and had done absolutely no planning for the sort of war we found in Korea. And in Vietnam, we were immersed in our experience on the European continent and sought to apply conventional methods to unconventional war. In each case, the Army was forced to adapt its tactical doctrine or theory to the reality of the existing war. These observations are not intended as an indictment of the US Army; they are an attempt to illustrate the complexity of the problem. If historical experience proves correct, the tactical doctrine that exists in peacetime will probably be radically altered if the real battle of the future arrives.

Neither can doctrine be simply extrapolated from one theater to another. During World War II, for example, the tactical concepts that were applied to Europe were often not transferable to the Pacific theater, and when American units were moved from one theater to the other, they had to undergo a rigorous period of retraining. The Germans also recognized the problem of projecting doctrine from one theater to another. Following World War II, General von Thoma, former head of the *Afrika Korps* said:

France had been ideal country for armored forces, but Russia was the worst—because of its immense tracts of country that were either swamp or sand. . . . Africa was paradise in comparison. Tank troops who had been in Russia found it easy to adapt themselves to the African conditions. It is a mistake to draw lessons from the African campaign and apply them to quite different conditions.<sup>16</sup>

While tactical doctrine may be derived by scientific methods, it should never become dogma, and its application should never be automatic but should always require careful adaptation and consideration.

**S**ome military observers have sought to transcend the difficulty of automatically applying tactical doctrine by simply labelling that problem as one of leadership. This view seems to hold that courage, charisma, endurance, and technical skills are more important than intellectual capacity, but this view is similar to the popular myth that war is nothing more than a matter of brute force, a matter of many heroic individuals doing their best against an enemy. It seems to suggest that the military commander's role is similar to that of the heroic literary figure and that some mystical personal quality surrounding his presence will give order where there would otherwise be chaos. Such views, in a real sense, belong more to the world of the theater than they do to the reality of the battlefield, and they view war solely as an art. Within the Army, there are clearly many subordinate levels where endurance and technical skills are more important than intellectual capacity, but the officer's responsibilities require a scientific understanding of his profession and a mental flexibility for adapting doctrinal concepts to the reality of the moment. The officer must spend a lifetime developing the judgment and depth of thought that will be essential to success on the modern battlefield. Personal presence is not enough. Rigorous intellectual preparation is absolutely necessary.

The need for the officer to think critically

is another aspect of tactics which is more closely related to tactics as an art and science rather than a technical trade. Military leaders have long recognized that it is superfluous to fill the mind of the military officer with tiny details and fragments of knowledge. Although the officer must have technical competence, he must also be trained to evaluate, to analyze, and to be able to dissect information that is given to him. Without this capability, he can make little of the practical experience of others, much less evolve new concepts or new battlefield techniques. Frederick the Great once caustically remarked that there were two mules in his army which had served through some twenty campaigns, but he added an important qualification: "They are mules still."<sup>17</sup> To draw the best out of personal or vicarious experience, a great deal of reflection and comparison is essential, but reflection and comparison are impossible if the brain has not been trained to think critically.

#### TACTICS AND THE MODERN BATTLEFIELD

In the 1970's the American Army seems to have come to the verge of abandoning the idea that tactics is ultimately an art. One of the most important reasons for this changing perception of tactics is the immensely complex technology which is rapidly changing the composition of the arsenals of the world. The revolutionary effect of the transistor has touched every aspect of the battlefield—communications, guidance systems, computers, and fire controls, to name but a few. Other technological advances have also acted to increase mobility or firepower on the battlefield, and are included, for example, in improved helicopters and precision guided munitions systems. With remarkably accurate weapons, computer-assisted intelligence gathering systems, vast communications networks, and so forth, a battlefield of the future may only remotely resemble that of the past.

In 1969 General William C. Westmoreland, then the Army's Chief of Staff, predicted that the "automated battlefield" could become a

reality within a decade. He suggested that with “the use of data links, computer-assisted intelligence evaluation, and automated fire control,” coupled “with first-round kill probabilities approaching certainty, and with surveillance devices that can continually track the enemy,”<sup>18</sup> a dramatically different approach to battle would be needed. As for tactics, the automated battlefield would apparently be one dominated by technical thinking. Where the battlefield had previously been dominated by men, it would in the future supposedly be dominated by technology.

The plethora of new weaponry has apparently convinced some military thinkers that even if the automated battlefield has not arrived, at least every soldier now needs greater technical expertise. The fact that technology dominates military weaponry seems to be *prima facie* evidence that approaches to all aspects of the battlefield must be technical. If there is any criticism to be made of this approach, it is that there is too great an emphasis on the technical nature of war. That is, some military officers seem to believe that the battlefield can be dissected, categorized, and prepared as if it were isolated in the laboratory. Once the proper equipment has been obtained and the correct ingredients added, only the killing remains to be done. Such antiseptic and theoretical models, however, ignore the “friction” and “animate nature” of the participants which distinguish the laboratory battle from the real battle.

In 1932 J. F. C. Fuller wrote, “The more mechanical become the weapons with which we fight, the less mechanical must be the spirit which controls them.”<sup>19</sup> Today, greater technical competence is undoubtedly required of the officer, for as military weapons and tools become more complex, he must possess enough technical skill to use and maintain military equipment. That need, however, does not erase or eclipse the requirement to be skilled in the less mechanistic aspects of tactics, since the introduction of new arms has compounded the officer’s problem of coordinating or

combining actions on the battlefield. The combat officer’s function continues to be leading his unit and gaining its maximum performance. If he becomes totally immersed in the technical performance of every weapon, he will lose sight of his essential mission—coordinating, combining, and controlling that unit.

In short, while tactics may be more technical, a concentration on technical skills should not result in our viewing war as a mechanistic science. The successful tactician must rise above technical details; he must use his creative intellect to devise the best concept for defeating the enemy.

On a battlefield of the future, a faster pace of war may make the commander’s decisions more difficult, rather than easier. While there have been recent advances in information retrieval and intelligence gathering systems, there have also been advances in the capabilities for maneuver and for disrupting intelligence and communication systems. These will markedly reduce the commander’s time and ability to react. In even the most favorable circumstances, troop leaders and staff members will have to make up their minds quickly. Given comparatively more—yet relatively sketchy—information, a commander who insists upon every piece of information before he acts, or who thinks he has time for long consultation and reflection, misunderstands how the battlefield has changed in recent years. The difficulties facing the military officer have been neither eased nor eliminated. And they are also by no means purely technical.

Despite the new technological advances, success on the battlefield continues to depend upon an ability to do or to reply to the unexpected. Rote procedures, such as decision matrices or a multi-stepped process for terrain analysis, can assist in the making of tactical decisions; however, when they become stereotyped or suppress innovation, they are more dangerous than helpful. If an enemy is able to identify predictable results, he possesses a great advantage. As has always been true, there is no substitute for an active mind on the battlefield.

## ORCHESTRATING THE BATTLEFIELD

The mature tactician knows he must understand current tactical techniques and procedures of combining and employing personnel and equipment on the battlefield, but he does not search for fixed rules or inflexible formulas. He understands that tactical problems must be approached in a rational manner. He uses a systematic method to collect, order, and analyze evidence, but his final decision will be affected by nonquantifiable factors which will be weighed as much by artistic or intuitive judgment as by scientific methods. The successful tactician recognizes the "friction" of war and understands that the tactical concepts he learns in the classroom may be applied in a dramatically different fashion when he faces the same problem on the battlefield. When he is faced with a different situation, he is able to create new techniques which are derived from the existing tactical concept. Thus, the successful tactician must possess a flexible mind, a creative intellect, and an ability to respond to a changing tactical environment. The future commander may eventually sit before a console, but he will never be a technician, and his profession will never be a trade.

In many modern writings, one often encounters the analogy of orchestrating the battlefield. The symbology is one of a group of symphony musicians who are properly playing their instruments, their performance based upon long scientific preparation. Yet, the orchestration of these instruments and the interpretation of the symphony itself remain as much an art as they are a science. There is a distinct difference between the obedient musicians in the orchestra and the imaginative genius of the conductor, who, knowing the mechanics of each instrument himself,

combines their effects into something original, powerful, and effective.

In the same sense, the successful orchestration of forces on the modern battlefield remains an art, served by many sciences.

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