TACTICAL INTUITION'S ROLE AND RELEVANCE TO COMBAT COMMANDERS IN THE FUTURE FORCE

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ABSTRACT

Title: TACTICAL INTUITION'S ROLE AND RELEVANCE TO COMBAT COMMANDERS IN THE FUTURE FORCE, 48 pages.

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There is a strong institutional push in the Army today emphasizing technology and systematic command processes over human ability as keys to battlefield supremacy. This argument discounts the historically vital role of the ground tactical commander, his abilities, and his intuition. Increased tactical mobility, greater accuracy and lethality of weapon systems, digitization, improved situational awareness through reliable and advanced sensors, and near real-time information will all force some change in the manner in which we command forces in battle. The "science" of the military profession is truly changing rapidly. Nevertheless, one common historical thread during periods of military change has been the steadfast importance of the commander's mind.

The importance of a tactical commander's intuition is well precedented throughout the history of war, including periods of profound "evolutionary" or "revolutionary" military change. Our recent history highlights the absolute importance of the commander's cognitive and intuitive abilities in battle command, including the skills of visualization and situational awareness in uncertain and ambiguous environments. In the minds of some senior officers and forward thinking scholars, however, future organizational and operational changes may negate its level of importance.

The question for our Army, then, is whether or not impending change will lessen the importance of the commander's intuition during combat operations. If the "art" is no longer paramount to success, then should we appropriately prioritize and emphasize the "science" of the profession? Also, will technology's dependence on the human mind be as critical to mission success as it is today? Will the commander's experience, knowledge base, tactical competence in the art of war, and imagination still be decisive components at the tactical level of war?

This monograph examines intuition's importance by defining it, relating it to the environment of war, providing examples of its combat influence from recent military history, and then deducing its future role and relevancy based upon current and projected technological development and doctrine in the U.S. Army. Arguments presented are based upon psychological, biological, and military theory, military history, and rational deductions. The paper presents facts in the psychological and biological basis of human thought, decision-making, and intuition and their relationship to combat; theoretical foundations and framework of the human element's importance in war; historical facts and vignettes which reflect the enduring importance of intuition during periods of military change; and the role of a combat commander's tactical intuition in a high-technology force on future battlefields.

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I. INTRODUCTION

Man is the fundamental instrument in war; other instruments may change but he remains relatively constant . . . In spite of the advances in technology, the worth of the individual man is still decisive. The open order of combat accentuates his importance.[1]

Professional and personal discourses in today's military are rife with predictions and postulations for the future force. The bulk of the discussions focuses on technological realities and possibilities, increasing automation capabilities, roles and missions in an uncertain and varied world environment, and possible belligerent threats. Inevitably, the discussions evolve into a debate on whether or not the Army is entering into, in the midst of, or departing from a "Revolution in Military Affairs" (RMA). The Army rightly participates in this debate vigorously. We are indeed in a transitory period of great change.

Conspicuously absent in many arguments concerning the Army's future is a humanistic and historically based prediction of future warfare that addresses the ground tactical commander's role—this is the critical unknown that requires accurate answers. Too much of the current speculation implies that technology, information superiority and automated command and control processes are the sole keys to land battlefield supremacy in the twenty-first century. Although it is possible that future warfare will be "a gigantic artillery duel fought with exceptionally sophisticated munitions"[2] and completely change the manner in which soldiers are led in combat,[3] reasoned analysis draws an entirely different conclusion. These positions discount the historically vital role of the ground tactical commander, his abilities, and the various moral elements indigenous to warfare. Quite simply, technological superiority alone has never won a war.[4]

What then, about the future role and function of combat leaders? Will technology replace the combat leader's role in motivating soldiers to risk sacrifice of their lives for mission accomplishment?[5] Have leader decisions been replaced by trunk circuits and microchips? The Army's tactical leaders are the executors of future wartime policy and will be the users of our nation's advanced technology. Thus, many questions concerning the tactical commander's future role demand answers for which the scope of this paper is insufficient. However, one aspect of the human element's role stands out prominently as critical to past, present, and future combat operations—the tactical commander's intuition.[6]

Military history reflects that the commander's ability to visualize the enemy, battlefield environment and subsequent activities, make correct and timely decisions, mentally clarify the battlefield's uncertainty, and "see the forest through the trees," has been fundamental to the achievement of tactical combat success. The distinctly human skill paramount to each of these tactical competencies is the essence of intuition. Defined by Webster's as "immediate apprehension or cognition . . . the power or faculty of attaining to direct knowledge or cognition without evident rational thought and inference . . . quick and ready insight . . .,"[7] tactical intuition remains vital in today's Army for achieving combat success. As one historian wrote:

> "Commanders are rarely in control over events on the battlefield. The successful general is not the one who carefully implements his original plans . . . but rather the one who intuitively 'reads' the chaos on the battlefield well enough to take advantage of passing opportunities . . . Since it is impossible to weigh all of the relevant factors for even the simplest decisions in war, it is the military leader's intuition (his *coup d'oeil*) that must ultimately guide him in effective decision-making."[8]

The importance of a tactical commander's intuition is well precedented throughout the history of war, including periods of profound "evolutionary" or "revolutionary" military change.[9] Up to the present day, a commander's intuition has steadfastly remained essential to the success of tactical operations regardless of any change. Our Army's recent history, since the turn of the century, highlights the absolute importance of the commander's cognitive and intuitive abilities in battle command,[10] including the skills of visualization and situational awareness in uncertain and ambiguous environments.

However, the future is less certain. An RMA implies that doctrine, organization, and tactics change in conjunction with technological advancement.[11] Assuming that the Army is in the midst of an RMA, the most important factor—the role of the tactical commander—remains as yet substantially unaddressed. Specifically, is a tactical commander's intuition essential to mission success on the twenty-first century battlefield? Has technology changed historical precedent and rendered human intuitive skill obsolete?

Theories on war's future should incorporate a realistic human role. As war's instigators and promulgators, human beings have always been a key component in mankind's ugliest endeavor and must be considered in its final equation. In criticizing "military men of all countries," Ardant du Picq's comments in the nineteenth century are uniquely appropriate today: "They fail to consider as a factor in the problem, man confronted by danger," he wrote. "Facts are incredibly different from all theories. Perhaps in this time of military reorganization it would not be out of place to make a study of man in battle and of battle itself."[12] Developing theories of future war without considering the human participant's impact or role, or by discounting man's importance, is as logical as

developing an automobile without considering the fuel source, or by stating that the fuel source is not as important as the technology contained in the automobile's design.[13]

The overriding problem with most modern arguments predicting war's future is that they ignore the true basis of predictive reliability. The various elements of war cannot be placed in petri dishes or test tubes and be systematically and repeatedly tested. Yet there is a "laboratory" available from which meaningful and proper analysis can be done and upon which reasoned hypotheses may be made—history. Predictions of war's future characteristics and nature demand a study of its past, which clearly depicts patterns and continuities superfluous to war's dynamic nature and constant change.[14] Williamson Murray summarized this succinctly by stating that: "History is the only laboratory we have, and if we do not ground our theoretical examination of conflict in that reality then we are spinning webs of nonsense."[15] Historical analysis, this laboratory of warfare, reflects that one constant in war is the "unchanging nature of man."[16]

This paper's premise is that tactical intuition is a vital necessity for tactical combat commanders in the future force. It is the essence of battle command and is neither a mystical trait nor an unattainable faculty. Variously described as "*coup d'oeil*," "sixth sense," "vision," "a hunch," or "gut feeling," intuition enables combat leaders to perform critical command and control functions during intense periods of planning or operations. It affords leaders the capacity to make timely, rational decisions based upon extensive experience, memorized skills and concepts, and subconscious pattern recognition. Intuition's technical and mental processes are complex; its development and utilization are not. Its importance to effective combat command cannot be understated. In the words of one intuition researcher, "Intuition is a powerful human faculty, perhaps the most universal

natural ability we possess."[17] Regardless of the technological, doctrinal, and organizational changes which lie ahead, a commander's intuition maintains its importance to the conduct of war.

This paper will clearly demonstrate the importance of a tactical commander's intuition to mission success in future war through analysis of three areas: First, it will describe the psychological and biological facts of intuition as they are currently known, and examine how they are related to and incorporated into the tactical commander's combat command functions; secondly, theoretical and historical foundations of tactical intuition will portray the "laboratory" results required for future hypothesis development; and finally, the paper will translate what is known about intuition from psychological research and historical analysis and apply it to the role of the tactical commander in today's Army and on the future battlefield.

Institutionally the Army must remember that "the human mind has the upper hand over any machine"[18] and not forget its foundation of strength—people. Our past achievements largely substantiate this. Soldiers—commanders—who in combat rationally, competently, and quickly make the proper tactical decisions have always been the hallmark of our greatest successes. Time in combat is an unforgiving, precious commodity and intuition enables commanders to succeed despite its constraints. As the excitement of improved technologies proliferates, we must be careful to glance to the rear as we forge ahead into the future.

Nevertheless, and regardless of the various arguments, the future will arrive and the Army must play an active role in it. The truth everyone seeks will be known only after the conclusion of an inevitable future war. At that point today's arguments become

tomorrow's history and will be forgotten or irrelevant except to a new generation of forward-thinkers studying the past and postulating on war even deeper into the future. A proper emphasis on the development and refinement of tactical intuition will greatly assist in ensuring that our future battlefield victories are the basis of that study.

II. INTUITION DYNAMICS

It is by the eyes of the mind, by reasoning over the whole, by a species of inspiration that the general sees, knows, and judges.[19]

Intuition has long been perceived as a mysterious and mystical trait, common only to persons possessing great genius or premonitional skills.[20] Although mentioned by some of the great philosophers and psychologists of the modern era, very few studies and investigations prior to 1960 focused on this mental function. "There seems to have been a spiritual mystique surrounding this invaluable faculty," wrote one author. "To delve too deeply would dispel, it was thought, not only the spiritual mystery but also the power giving the intuition."[21] Although intuition's definitions vary, recent research has been both more aggressive and comprehensive in determining what it is and how it works. Findings now portray intuition as a common mental capacity, closely linked to biological functions, which can be developed, improved upon, and utilized in everyday life.

Psychological Foundations of Intuition

A concrete and universally accepted understanding of intuition is elusive. In fact, there is no encompassing standard definition, and the only characteristic that scientists have found to be common in intuitive people is that they are experts in their field.[22] In Tony Bastick's exhaustive study, *Intuition: How We Think and Act*, the author lists a sample of views and descriptions from hundreds of research documents pertaining to intuition and insight (see appendix).[23] He found that theories and understandings varied by researcher, but reflected many commonalities in the comprehension of intuition. The properties he listed are enlightening because they are found repetitively in discussions of

intuition and comprehensively describe its characteristics. Like any theory, though, an exposure to the differing views on intuition is important in order to understand the many complexities of this mental faculty and to develop a working definition from which its incorporation into military application can be viewed.

Karl Albrecht vaguely defines intuition as a "preconscious process of logical reasoning, which has not (yet) manifested its effects in conscious, systematic form."[24] A prominent psychologist defines it as "the possession of, rapid access to, and efficient utilization of an organized body of conceptual and procedural knowledge."[25] Bastick calls intuition "a product of accepted psycho-physiological processes of thought and behavior that occur under particular conditions of personality, environment, and experience."[26] His intuition theory contends that "past experiences condition response to contiguous emotional states, producing emotional sets. These emotional sets are the attitudes with which we approach present situations."[27] In contrast to analytic thought, which Bastick claims is based on the definitive relationships between only two elements at a time, intuitive thought is based on non-cognitive emotional relationships with "all elements in the field of knowledge."[28] Thus, Bastick's research reflects that intuitive thought is founded on experience and exercised through a comprehensive, perceptual, non-systemic relational process.

Human experiences as a basis of intuition is a common finding of many other researchers. One author concluded that intuitive decision making consisted of rapid conclusions reached by a combination of experience and knowledge. He contends that "intuition is the product of a well-organized body of experience and knowledge that can be rapidly processed to make quick decisions."[29] Hubert and Stuart Dreyfus assert that

intuition derived from life experiences is a routine ability that people use during any average day. "When we speak of intuition . . .," they wrote, "we are referring to the understanding that effortlessly occurs due to discriminations resulting from previous experiences."[30] Their view is that experience, knowledge and practice combine to develop expertise, which then enables the utilization of intuitive thought in decision making and problem solving.

In comparing human intuitive skill to automated problem solving, the Dreyfuses state that the expert decision-making exhibited by humans is predominantly intuitive and far exceeds the capabilities of computers to make similar rational conclusions.[31] The decision making of experts, they conclude, is normally not based upon detailed analysis and problem solving methods. Rather, experts do "what works" intuitively, based upon an abundance of experiential knowledge. "The two highest levels of skill," they claim, ". . . are characterized by a rapid, fluid, involved kind of behavior that bears no apparent similarity to the slow, detached reasoning of the problem-solving process."[32]

In a solo work, Hubert Dreyfus contends that common sense, derived from experience, explains some intuitive thought and action. The fact that we interact in life each day by seeing, touching, and experiencing material things in active but differing cultural environments provides us with a foundation of common sense.[33] Concerning experience, he writes:

> "When one has had a great deal of experience in a domain, one simply sees what needs to be done. It seems that when a person has enough experience to make him or her an expert in any domain, the field of experience becomes structured so that one directly experiences which events and things are relevant and how they are relevant."[34]

Intuition as a subconscious thought process is another component of intuition research often addresses. Most brain activity, in fact, occurs at the subconscious level and is transparent in our activities.[35] John Adair calls intuition, "the apprehension of the mind without the intervention of any conscious reasoning process, [and it] may describe the instant and immediate eruption into the surface of the mind of some swift piece of depth mind analysis of a total phenomenon. Consequently, intuition may be the form of analysis most practiced by predominantly holistic minds."[36] "Depth mind" is a term Adair coined to describe the subconscious workings of the mind.

Similarly, Albrecht asserts that intuitive thought, as a mental process working in the background of the mind, should be trusted as a reliable form of reasoning. In referring to intuitive thought as "hunches," he wrote that: "Trusting your hunches, then, comes down to 'listening' for the subtle clues which play about the edges of the foreground of your conscious thought, and which cast the shadows of a preconscious reasoning process that may have resulted in a valuable conclusion."[37]

The subconscious mind, then, serves as the warehouse from which many intuitive thoughts or actions are derived. Experiences and knowledge are stored and organized subconsciously and then retrieved as required by skilled intuitive thinkers. This capacity for dealing with active, complex problems through the use of subconscious knowledge is largely underutilized yet distinctly trainable.[38] Subconscious knowledge affords thinkers with a database of relationships and situational experiences. As one author wrote in describing the process of intuition:

> "Developing the intuitive faculties allows one to recognize the possibilities inherent in any situation. When one becomes aware of possibilities, one is free to make choices . . . Intuition allows one to draw on that vast storehouse of unconscious

> knowledge that includes not only everything that one has experienced or learned, either consciously or subliminally, but also the infinite reservoir of the collective or universal unconscious, in which individual separateness and ego boundaries are transcended."[39]

Intuitive thought also occurs as the result of a comprehensive and unrestrained thought process. Hubert and Stuart Dreyfus call this comprehensive process "holistic discrimination and association," in which the brain responds to environmental patterns or situations as an entity, without analyzing their component parts.[40] Hubert Dreyfus further characterizes this as the "*gestalt*" or "global phenomenon," whereby "the interpretation of a part depends on the whole in which it is embedded."[41] This process enables intuition to determine critical components of a problem or situation through knowledge of the whole.

Intuition derived from unrestrained thought implies a mind receptive to the free-flow of ideas as mental requirements arise. Periods of unrestrained thought often occur while a person is either physically or mentally temporarily detached from the situation that requires action or decision. This situational detachment affords the subject with relative periods of cognitive conscious inactivity, causing subconscious ideas and thoughts to arise into the realm of conscious thought. Popularly called "incubation," researchers suggest that this period enables experts to effortlessly arrive at decisions or conclusions.[42]

Creativity is also a critical component of unrestrained thought and intuition. Intuition and creativity are, in fact, bound together through common mental faculties. Intuitive thinkers have a propensity for highly creative thought and vice versa.[43] Vaughan argues that artistic experiences and discoveries in scientific fields are actually intuitive, with intuition playing a vital part in their overall processes.[44] "Ultimately," wrote one author team, "intuition requires a remarkable blend of creativity, skillful reasoning and

foresight."[45] There is a symbiotic relationship between the two which focuses creative effort and activates dynamic intuition.[46] To further link their attributes, both creativity and intuition are developed through an active mind and a breadth of knowledge developed through study and experience.[47]

As these examples reflect, collective research findings today illuminate three common traits manifested in the many descriptions of intuition: it is a phenomenon of sub-conscious thought; it relies heavily on experience-based knowledge that leads to expertise in a given field or endeavor; and it is a comprehensive, unrestrained thought process. A working definition of intuition can thus be summarized as follows: *Intuition is a mental process whereby subconscious knowledge is automatically or summarily retrieved and utilized by the conscious mind, thus producing a range of possibilities available for instant analysis and used in order to make a decision or derive a logical conclusion based upon a problematic situation or environment.* However, since this mental faculty involves the direct or indirect use of a human being's most important organ—the brain—and many aspects of human senses (sight, in particular), total understanding of this ability requires a working knowledge of its biological components.

Biological Foundations of Intuition

Intuition is a "mind-body" process which involves the active interrelation between psychological and physiological functions. The constant feedback between conscious and subconscious thought processes and the body's responses to stimuli modifies or dictates human behavior. The cognitive processes of intuition are modified by various physiological functions, including the voluntary neuromuscular system, hormonal activity,

digestions, intro-organic tensions, the autonomic nervous system and internal stimulation of glands.[48] The link between the body and the mind is obviously quite complicated. One author calls it "an incredibly complex pattern of electrical-chemical signals flitting rapidly about through this blob of tissue, a biological computer of awesome capability."[49] Immediately important to this paper's understanding of intuition, however, are the different fundamental functions of the two halves of the human brain and their relationship to the intuitive thought process.

The human brain contains two generally symmetrical halves, commonly referred to as the "left hemisphere"—left side, and the "right hemisphere"—right side. Although not positively conclusive, most current research suggests that each side of the brain performs a different role in human mental functioning, particularly in information processing. They are biologically separate, yet they cross-communicate through a detailed connection of neural processing.[50] As this paper will show, the right side of the brain is the "command center" of intuitive thought.

The left side of the brain is usually referred to as the "dominant side" because of its close relationship to speech, language, and other higher mental functions. This side of the brain processes information verbally and analytically and tends to monopolize information processing in most individuals. The left side analyzes, abstracts, counts, methodically plans, verbalizes, and makes logical, rational decisions.[51]

As Albrecht succinctly points out, "the 'left brain' deals primarily with information which can be represented in sequential or linear form. Such inputs include sequences of sounds, words, and sentences, the repetitive feature of visual patterns, written language, numbers, and logical 'if-then' relationships."[52] During a normal waking day, the left side

of the brain is more active than the right side, while during sleep periods it reverts to a submissive role. The left side of the brain controls the right side of the body, and thus 90% of people are considered to be "right dominant."[53] To summarize, the left side of the brain processes information analytically, preferring logical, sequential forms and processes.[54]

The right side of the brain operates in a generally opposite fashion to the left side in information processing functions. It is the artistic side of the brain and deals with creative activities such as imagination, color, music, and rhythm. It identifies how objects are interrelated and understands patterns and spatial relationships.[55] The right side deals in whole forms and not sequences, preferring visual and spatial relationships over logical, linear concepts.[56]

The fact that the right side of the brain is better than the left side in determining relationships is an important point in understanding intuition. Intuition is not a skill which solely draws upon memorized facts from "rote learning." Rather, it is a skill which enables the clarification of ambiguity through abstract pattern comparison and logical, albeit rapid, subconscious analysis. The brain's right side is the processing unit which affords this capability.

Faced with a problem requiring resolution, intuitive thinkers use this skill to scan a subconscious database of previously stored information ("use" does not imply a cognitive, lengthy, systematic process implementation—rather, it is relatively automatic, similar to our bodies knowing through our brain function when to put one leg in front of the other when we walk). This knowledge scan "looks" for situational similarities, determines

activity patterns, and develops rational solutions or conclusions, which are then brought into the realm of conscious thought.

Information is organized and stored in the brain after it is received through sight, sound, or other means. As the brain's database of knowledge grows in a given subject area, the information base becomes not only larger but more abstract. This facilitates its retrieval and interpretation for use by the right side of the brain.[57] This organization of virtually limitless data enables intuitive thought by skilled thinkers. As Benderly notes, this does not mean that experts necessarily possess great perceptual ability, but it does mean that they can see "deeply into a problem" through access and utilization of the information contained in the stored database.[58] Napoleon Bonaparte had no formal psychological training or education, yet he perfectly summarized this process in describing his own thought patterns. "Different subjects and different affairs are arranged in my head as in a cupboard," he wrote, "When I wish to interrupt one train of thought, I shut that drawer and open another. Do I wish to sleep? I simply close all the drawers and there I am—asleep."[59]

The right side of the brain is thus the body's enabler of intuitive thought. It provides a series of previously stored choices pertinent to a current situation on which a decision or course of action can be based. In general terms, the biological functioning of the intuitive process can be summarized as follows: *Confronted with a problematic situation, the brain retrieves abstract, organized data from subconscious memory; looks for and determines a rational pattern or similarity between that data and the problematic situation; determines and weighs the collective data's relevance to the given problem or situation as a whole; and then transfers relevant possible solutions into the conscious*

realm from which the brain can logically decide and act. Remarkably, this is the essence of the "gut feeling."

With the psychological and biological foundations of intuition now established, an assertion can be made with some certainty that neither the right nor the left sides of the brain are immediately useful in the instant of assaulting an enemy trenchline or in mortal hand-to-hand combat with a savage enemy. So what is the connection between intuition and tactical military competence? Is intuition a skill that we should admire in artists but neglect in professional soldiers? If any, what is the military application?

As the following section will show, the correlation between a commander's intuition and tactical combat success is monumental. Theoretical constructs and historical events reflect a lucid pattern of intuition's important role in war. Quite simply, intuition enables leaders to overcome some of warfare's uncertainties and to make decisions under horrific, constrained environments. In non-military endeavors, it is a trivial and unnoticed occurrence—in war it is the lifeblood of command decision and the precursor to victory.

III. THEORETICAL FOUNDATIONS

Yes we need forward thinkers . . . It is also essential that we do not believe that we possess such enormous wisdom that we can dismiss the past.[60]

Intuition as a mental faculty and war as a human endeavor are not newly discovered occurrences of the modern era. Human conflict is undoubtedly as old as the record of civilized man,[61] and intuition dates from the first appearances of rational human intelligence. War by nature is uniquely human, and thus encompasses the mental and physical totality of human endurance and achievement. It is also arguably and simultaneously a paradox; we engage in war although it is diametrically opposed to most things that human kind cherishes.[62] What is relevant is that, in concert with all other human traits, abilities, and characteristics, intuition likewise manifests itself in war and affects its prosecution and termination.

"Military intuition" cannot be considered tangibly different than intuition practiced in other fields. In fact, the intuitive thought process applied to war is unique from its application in other enterprises in only one respect: the environment of war involves killing other human beings as a matter of routine. As one author asserted in describing command in war: "Command must deal with life and death decisions of a nature seldom if ever understood or even studied by specialists in economics or in management."[63] Although described in different terms and manners throughout literature and history, intuition on the battlefield retains its inherent characteristics and functions.

That intuition and war are inextricably mixed is reflected in classical military theory and military history. The Prussian soldier and military theorist Carl von Clausewitz is foremost among those espousing this view.

Clausewitz and Intuition

Clausewitz discussed the characteristics and functions of military intuition throughout his classic work, *On War*. Though some of his views are merely indirect allusions to what is now understood as intuition, his various discussions of the human element and characteristics of commanders reflect an encompassing insight into intuition's development and its employment in war.

A believer in history's pragmatic application, Clausewitz viewed the past as the sole reliable means by which an understanding of war's universal elements—chance, friction, and genius—could be attained.[64] This methodology is reflected in his theory of war, in which the dominant role of man and the intuitive thought process is firmly ensconced in the achievement of any measure of success.

In his discussion of military genius in Book 1 of *On War*, Clausewitz laid the foundation for what he considered to be key attributes of great combat leadership. He asserted that genius refers to "a very highly developed mental aptitude for a particular occupation . . . [it] consists in a harmonious combination of elements, in which one or the other ability may predominate, but none may be in conflict with the rest."[65] To Clausewitz, fundamental and versatile skills and a strong knowledge base—important components of intuitive thought—were indispensable traits for combat leaders.

Clausewitz' military genius theory countered the problems in war caused by his theories on friction.[66] To him, genius consisted of a combination of intellectual and emotional qualities which could "most effectively create and exploit the reality" caused by war's friction and chance.[67] Instinct and imagination, components of intuition functions, are two of these prominent qualities.

In describing how genius can overcome "a fog of greater or lesser uncertainty," he writes that "a discriminating judgment is called for; a skilled intelligence to scent out the truth."[68] He writes further that: "If the mind is to emerge unscathed from this relentless struggle with the unforeseen, two qualities are indispensable: first, an intellect that, even in the darkest hour, retains some glimmerings of the inner light which leads to truth; and second, the courage to follow this faint light wherever it may lead."[69] He describes this first quality by the French term *coup d'oeil*, and the second he calls determination. His eloquent statement, "glimmerings of the inner light which leads to truth," is an artistic portrayal of military intuition.

His continuing discussion of genius in Book 1 directly refers to the importance of a commander's intuitive thoughts in battle. He wrote:

> "In the dreadful presence of suffering and danger, emotion can easily overwhelm intellectual conviction, and in this psychological fog it is so hard to form clear and complete insights that changes of view become more understandable and excusable. Action can never be based on anything firmer than *instinct, a sensing of the truth*" (emphasis mine).[70]

What Clausewitz illuminates here is the commander's ability to maintain resolve in the face of adversity and the "fog of war." He maintains that commanders must not waver in their decisions and should strive to be unaffected by war's numerous and competing demands. Weather, uncertainty, unforeseen calamities, and ill-timed mistakes all combine

to cause friction. Clausewitz' means to a successful end is "instinct, a sensing of the truth," which translates into the commander's military intuition.

To Clausewitz, instinct was a trait that was both learned and bred. He believed strongly in the importance of education and training, and stated that knowledge "must be so absorbed into the mind that it almost ceases to exist in a separate, objective way." He continued: "By total assimilation with his mind and life, the commander's knowledge must be transformed into a genuine capability."[71] Here is a clear annunciation of his strong belief that education served to maximize the development of intuition and genius which can then be transformed into battlefield action.

Clausewitz did not view the attainment of "inner light" as achievable through standardized memorization of facts and principles, but rather through the process of experiencing the many aspects of reality.[72] "The knowledge needed by a senior commander is distinguished by the fact that it can only be attained by a special talent . . .," he wrote, "an intellectual instinct which extracts the essence from the phenomena of life, as a bee sucks honey from a flower."[73] In describing the demanding qualities of military leaders in the heat of battle, Clausewitz clearly outlines the relationship between tactical intuition and experiential knowledge as its means of fruition:

> "The great requirements are the gifts of quickly sizing up a situation, of vigor, persistency, and a youthful, enterprising spirit . . . Clearly, most of these are not qualities that can be acquired through book learning. If they can be taught at all, a general will have to receive his instruction from sources other than the printed word. The impulse to fight a great battle, the unhampered instinctive movement toward it, must emanate from a sense of one's own powers and the absolute conviction of necessity—in other words, from innate courage and perception, sharpened by experience of responsibility."[74]

Clausewitz also postulated that talent and instinct in war are qualities with which great commanders are born. In describing this genetic theory, he wrote that "most men merely act on instinct, and the amount of success they achieve depends on the amount of talent they were born with." All of history's great commanders actively used instinct, stated Clausewitz, "and the fact that their instinct was always sound is partly the measure of their innate greatness and genius."[75] This premise was relegated to the background of his theories on genius and tactical intuition, but it recognizes the fact that in war and otherwise, humans differ in their mental and physical abilities.

A Clausewitzian military genius possessed sound instinct. This was the premise and vision of his theory on greatness in war. He summarized this skill near the conclusion of his discussion on genius, by stating that:

> "The man responsible for evaluating the whole must bring to his task the quality of intuition that perceives the truth at every point. Otherwise a chaos of opinions and considerations would arise, and fatally entangle judgment . . . What this task requires in the way of higher intellectual gifts is a sense of unity and a power of judgment raised to a marvelous pitch of vision, which easily grasps and dismisses a thousand remote possibilities which an ordinary mind would labor to identify and wear itself out in so doing."[76]

This passage aptly reflects most of intuition's key components in a military context. "Evaluating the whole" implies the comprehensive and global awareness required of intuitive thought which can discern logical conclusions and resolutely carry them through—"the truth at every point." The stated prerequisites of "higher intellectual gifts," a "sense of unity" and "a power of judgment raised to a marvelous pitch of vision," indicate the ability to clearly understand the scope and magnitude of the problem at hand, and subsequently comprehend the cognitive requirements mandated therein. Once accomplished, the essence of intuition—grasping and dismissing "a thousand remote

possibilities which an ordinary mind would labor to identify"—erupts into the genius' conscious and renders the logical solution possible.

Imagination is also an important component of the Clausewitzian military genius. As a product of creativity, it maximizes the potential of intuitive thought and concurrently works with intuition to expand the range of options and solutions in problem solving. As one author wrote, war's uncertainty "calls for the free creative work of the artist . . . the standardized product of the artisan is doomed to failure."[77] Clausewitz understood this and grasped that it had to be developed through experience and knowledge. Regarding imagination, he asserted "that practice and a trained mind have much to do with it is undeniable."[78]

Clausewitz also maintained that imagination, incorporated into an intuitive thought process, was particularly important to the nineteenth century battlefield problem of terrain comprehension. He identified it as a "unique problem" and stated that:

> "To master it a special gift is needed, which is given the too restricted name of a sense of locality. It is the faculty of quickly and accurately grasping the topography of any area which enables a man to find his way about at any time. Obviously this is an act of the imagination. *Things are perceived, of course, partly by the naked eye and partly by the mind, which fills the gaps with guesswork based on learning and experience, and thus constructs a whole out of the fragments that the eye can see*; but if the whole is to be vividly present to the mind, imprinted like a picture, like a map, upon the brain, without fading or blurring in detail, it can only be achieved by the mental gift that we call imagination" (emphasis mine).[79]

Clausewitz' reference to "guesswork" is actually the transformational process of subconscious thought moving into the conscious realm, resulting in a constructed "whole out of the fragments that the mind can see,"—intuition. *On War* reveals that he uses imagination somewhat interchangeably with his concept of *coup d'oeil* and instinct, yet his message—the decisive nature of the commander's intuitive abilities—remains clear.

Perhaps Clausewitz' strongest argument in his intuition discussions pertains to its direct influence on the course of battle through the commander's decision making process. His theories show that the commander's mind is not only that which directs the mechanical formations during combat, but also is that which alone can achieve Dreyfus' "holistic discrimination" in the conflict, process innumerable data, and then act with resolve. This ability is derived and achieved by the use of intuitive thought and subsequent decisive action. Human decisions, above all, determine war's end result.

Clausewitz wrote that intangible moral qualities—among them intuition—often determine the ebb and flow of battle. He asserted that a "general's other psychological qualities may control the power of circumstances." Even if this control results from "strong emotions and from flashes of almost automatic intuition . . . it nonetheless genuinely pertains to the art of war."[80] He emphasizes this point in his statement that "the seeds of wisdom that are to bear fruit in the intellect are sown less by critical studies and learned monographs than by insights, broad impressions, and flashes of intuition."[81] He later added that "the man of action must at times trust in the sensitive instinct of judgment, derived from his native intelligence and developed through reflection, which almost unconsciously hits on the right course."[82]

To Clausewitz, this was the ultimate ideal of the "art" of war. This in its purest form was the counteracting force to the inevitable friction and fog of battle. When "intellectual activity leaves the field of the exact sciences of logic and mathematics," he wrote, "it then becomes an art in the broadest meaning of the term—the faculty of using judgment to detect the most important and decisive elements in the vast array of facts and situations." He added:

> "Undoubtedly this power of judgment consists to a greater or lesser degree in the intuitive comparison of all the factors and attendant circumstances; what is remote and secondary is at once dismissed while the most pressing and important points are identified with greater speed than could be done by strictly logical deduction."[83]

To Clausewitz, the human element was as important as any factor in his theories on war. Within the large scope of the human element, genius and its associated qualities clearly were the most critical to attaining his image of an ideal commander. Intuition, variously described by Clausewitz as *coup d'oeil*, instinct, and "glimmerings of the inner light," (among others), is undeniably at the forefront as the decisive element in his many qualities of genius.

Clausewitz witnessed first hand the transformation of warfare in the nineteenth century and comprehensively studied all that it embraced. What stands out in his theories is a consistent referral to man as the embodiment of battle. He initiates it, he fights it, and he determines its outcome. Clausewitzian theory substantiates that, within the horrors of battle itself, the commander's mind—his tactical intuition—dictates the flow of events and ultimately determines victory or defeat.

Other Theorists and the Concept of *Coup d'oeil*

Obviously, Clausewitz was not the only military theorist or practitioner who recognized and espoused the importance of tactical intuition to the art of war. Frederick the Great, Marshal de Saxe, Ardant du Picq, and Napoleon Bonaparte are some of the more prominent names in recent history who directly or indirectly wrote about intuition. None did so to the extent of Clausewitz. However, all recognized the importance of the

human element and to some degree correlated battlefield success with the commander's intellect.

Common to most of them is a description of the intuitive thought process referred to as "*coup d'oeil.*" This personal trait which Clausewitz called a commander's "ability to see things simply, to identify the whole business of war completely with himself . . .",[84] other writers likewise strained to define. The U. S. Army Infantry School followed suit in 1938 by publishing a collective faculty effort pertaining exclusively to *coup d'oeil.* The faculty's conclusion was that *coup d'oeil* consisted of two parts—an ability to see and comprehend a large tactical situation at a glance (including the terrain), and then an ability to decide quickly and act, based upon the previous comprehension.[85]

This section will show that although the definitions and descriptions of *coup d'oeil* and intuition by the different authors vary, the underlying meanings contained within their prose are relatively uniform. The theories they prescribe reflect the lasting importance of this critical trait, its embodiment in tactical intuition, and its ubiquity in warfare.

Frederick the Great viewed *coup d'oeil* as a tool—a mental faculty—for visual terrain analysis and enemy situational analysis. Though still important today, terrain in Frederick's day was arguably more critical to a battle's outcome. In his own words, to a commander it was "the foremost oracle that one must consult, after which he can fathom the enemy dispositions by his own knowledge of the rules of war."[86] He continued:

> "The coup d'oeil, properly speaking, is reduced to two points. The first is to have the ability of judging how many troops a given position can contain, a trick that is acquired only through practice . . . The other and by far the most superior talent is to know how to distinguish at first sight all the advantages that can be drawn from the terrain. One can acquire and perfect this talent if he is in the least endowed with a fortunate bent for war."[87]

This description of *coup d'oeil* succinctly describes expert terrain visualization and association. Unbeknownst to Frederick, he also described the intuitive thought process in simple but clear terms. His first point identified that *coup d'oeil* was an ability acquired through practice, which relates to intuition's reliance on a broad base of knowledge—predominantly experience—from which to bring relationships and whole examples from the subconscious to the conscious realm.

His second point, the "most superior," refers to the talent of comprehending and distinguishing instantly all of the terrain's advantages. Frederick's perception here encapsulates the intuitive thought process in action. Summarized, this involves seeing the terrain, comprehensively ingesting the terrain's whole picture into the brain where it is then compared against the organized database of knowledge extracted from subconscious thought, and then choosing from the produced options in order to bring reasoned, logical interpretations into conscious realization.

Frederick also realized that these skills could be developed and improved, primarily through the knowledge gained by experience. "Theoretical knowledge is of no use if it is not supplemented by positive practice," he wrote. "You must train yourself to select terrain and make dispositions; you must reflect on this subject; and then theory, reduced to practice, makes all of these operations skillful and easy."[88]

He did not believe that perfection in war was possible,[89] but he did understand the relationship between the *coup d'oeil* qualities that he cherished in combat leaders and the quest for perfect knowledge. He addressed this in stating that:

> "Prudence prepares and traces the route that valor must pursue; boldness directs the execution, and ability, not good fortune, wins the applause of the well informed. Our young officers may learn the theory of this difficult science by

studying some classical works, and *train themselves by frequenting the society of men of experience*" (emphasis mine).[90]

For Frederick, experience alone was the source of the *coup d'oeil* that related to instantaneous understanding of the enemy situation at the beginning of a battle.[91]

Frederick's writings are practical and clear. The qualities of *coup d'oeil* that he describes (enemy comprehension at the moment of combat and terrain visualization and appreciation) were immensely important to the conduct of war in his era. His discussions expertly describe the traits of intuitive thought and relate them to the major tactical problems of the eighteenth century. Although not mentioned by name, intuition as a vital leader's combat skill is nevertheless evident in his descriptions.

Another eighteenth century soldier and writer, Marshal Maurice de Saxe, summarized his thoughts on what is required for success in combat in one sentence in his 1732 work, *My Reveries Upon the Art of War*. "The important thing," he wrote, "is to see the opportunity and to know how to use it."[92] This generalization of intuition implies using the innate tactical skills of global comprehension of a given situation, logical decision making to maximize an advantage over an enemy force, and rational action in order to carry out a decision made in battle.

The intuitive traits of creativity and imagination combined with firm resolve were not lost on de Saxe. To him, superb military leaders embodied inquisitive, rigidly determined thought and action. A great general should "possess a talent for sudden and appropriate improvisation," he wrote. "He should be able to penetrate the minds of other men, while remaining impenetrable himself. He should be endowed with the capacity of

being prepared for everything, with activity accompanied by judgment, with skill to make a proper decision on all occasions, and with exactness of discernment."[93]

And like Clausewitz, de Saxe believed that tactical skill and the ability for skilled intuitive thought were at least partially attributable to traits gained at birth. He asserted that: "Unless a man is born with talent for war, he will never be other than a mediocre general . . . talent must be inherent for excellence. All sublime arts are alike in this respect . . . . Application rectifies ideas but does not furnish a soul, for that is the work of nature."[94]

Still one other Frenchman, Ardant du Picq, an infantry officer during the post-Napoleonic period, wrote *Battle Studies* as an objective attempt to discover and describe human behavior in combat and its effects on battles, campaigns, and wars. His direct references to the intuitive thought process are minimal; however, this classic work demands mention because it is a compilation of research, ideas, and theories on combat and warfare which focuses on the human participant's abstract dimensions. Indirectly, his writings portray many characteristics and environmental considerations common to tactical intuition.

Du Picq conveys one clear message in his theories relevant to this study of intuition. He wrote that the dynamics of combat involve two forces—material and moral. He theorized that moral forces, those which are related to the psyche and motivation of the human soldier, are the most crucial for success in combat and are the most potentially decisive. "Man is the fundamental instrument in battle" he wrote, "nothing can wisely be prescribed for an army. . . without exact knowledge of the fundamental instrument, man, and his state of mind, his morale, at the instant of combat."[95] Du Picq rightly theorized

that the actions of the soldier and his ever-changing mental state are more important to the outcome of a battle than a given weapon or other competing factors. He referred to this as the moral force of a soldier or army, and theorized that the resulting moral effects of soldiers determine success on the battlefield.

Du Picq's focus was the soldier's mental composition. Without much extrapolation, his inferences demonstrate an acuity which captured the importance of the commander's intuition and decision-making ability during the confusion of battle. "The human heart in the supreme moment of battle," he asserted, "is the basic factor."[96] He believed in the importance of experience-based knowledge, and conveyed its connection to battlefield competence by simply stating that: "If you really want to learn to do your work, go to the line."[97] He also recognized that an army requires "leaders who have the firmness and decision of command *proceeding from habit* . . ." (emphasis mine).[98] Du Picq's message that moral and not physical factors dominate war corroborates the related theories on tactical intuition.

Probably the greatest of all "great captains," Napoleon Bonaparte is often used as *the* preeminent example of military genius. He was no theorist in the pure sense, but was arguably the greatest military commander in history, whose powers of intuitive thought during battle and periods of planning are legendary.[99] Either through his experiences in war or by thorough introspection, he learned that intuition was critical to battlefield success. In his *Maxims*, Napoleon described his personal principles for war and discussed his concept of *coup d'oeil*.

"The general never knows the field of battle on which he may operate," he wrote in maxim #115. "His understanding is that of inspiration; he has no positive information;

data to reach a knowledge of localities are so contingent on events that almost nothing is learned by experience." The inspiration that Napoleon refers to is the commander's intuitive thought process, his instinct for determining truth and achieving clarity in the midst of uncertainty. He believed that this faculty was one with which leaders were essentially born, and one that enabled them to understand the parts of a situation through an awareness of the whole. He continued: "It is a faculty to understand immediately the relations of the terrain according to the nature of different countries; it is, finally, a gift, called a *coup de 'oeil militaire* . . . which great generals have received from nature."[100]

A study of Napoleon's amazing abilities in war and his writings throughout his military life reflect a comprehension of the importance of experience to the intuitive process. To Napoleon, intuition was instant, global understanding of a situation gained through the analysis of previously learned information. As previously discussed, he believed that in part this was genetically based, but he also professed that through experience in the trade of war intuitive abilities could be bred.

"The first qualification of a general-in-chief is to possess a cool head," he wrote in one of his maxims, "so that things may appear to him in their true proportions and as they really are." He continued:

> "The impressions which are made upon his mind successively or simultaneously in the course of a day, should be so classified in his memory that each shall occupy its proper place; *for sound reasoning and judgment result from first examining each of these varied impressions by itself, and then comparing them all with one another*" (emphasis mine).[101]

He went on to write that: "Commanders-in chief are to be guided by their own experience or genius . . . generalship is acquired only by experience and the study of the campaigns of all great captains."[102] Napoleon's recognition of intuition thus showed a parallel

understanding to that which is common to today's researchers and writers—it is a learned skill requiring the retrieval of an organized database of knowledge previously gained through experience and other means of education.

Many other theorists, soldiers, and writers have commented since the Napoleonic era on the role of intuition in combat. Chief of the Prussian General Staff, Helmut von Moltke, stated that intuition usually provides the only means available to leaders for clarifying the uncertainty inherent with the fog of war.[103] He stated that the continual series of actions inherent in war are not premeditated, but rather are "spontaneous, dictated by military intuition."[104] The historian Michael Handel adds that, ". . . where action must be taken without delay, there is no substitute for a military commander's experience and intuition."[105] And finally, historian James Stokesbury observed through his research that there are certain personal attributes that separate the average from the great soldier. Intuition was one of these attributes, and he acknowledged that much of this skill could be gained through experience.[106]

This review of theoretical and historical writings thus provides clear evidence of the prominence of notions concerning intuition to some of warfare's pre-eminent thinkers. The notion's recurring presence in the written words of theorists and practitioners adds emphasis to the lessons it offers to today's professional soldiers. Theory cannot be considered reality, but merely man's intelligent estimate of what that reality is. As one military historian wrote: "Because we cannot perfectly model future human behavior and interaction, past wisdom may be more helpful than critics suspect."[107] That theory conveys intuitive abilities as an important skill for tactical combat leaders may not be sufficient in and of itself to establish its criticality to battlefield success. However, the

combination of theory, history, and a reasoned hypothesis of future war is highly suggestive that such a claim can be made. Our Army's own history and present situation support this hypothesis.

IV. TACTICAL INTUITION AND THE U. S. ARMY

Victory in war does not depend entirely upon numbers or mere courage; only skill and discipline will insure it.[108]

Combat success is the U. S. Army's legacy. Many variables and coincidences have combined for this to be the case, but surely among the most prominent of these have been the men who waged our wars. Our history reflects giants of proficiency and courage at all levels, but particularly at the crucial point—the tactical level—have the Army's forebearers garnered special acclaim. What is it that has given us the edge over our adversaries and enabled us to stand as victorious conquerors at the top of the smoldering hill? The answer is not easily quantifiable, but numerous intangible qualities, such as courage, boldness, determination, and loyalty are most recognizable.

One factor, however, can be considered as the instigator of victorious actions and the means to realizing all the other qualities which we admire. This element is simply the sound tactical decision in the roar of battle, upon which all tactical actions are derived. This critical intangible quality—this masterful skill—is based on the sound intuition used by successful combat leaders. Its demonstrated cycle in most successful tactical combat operations is simple: During battle, the environment stimulates intuition, intuition forms the foundations for decision, and the decisions thus made subsequently change the course and terms of battle.

The key to our battlefield successes is therefore competent decision makers who use their innate and learned intuition to make timely decisions based upon a changing and unforgiving hostile environment. This is represented in the annals of the Army's history

and in the text of our doctrine and war fighting publications. Our present doctrine redundantly, albeit inconspicuously, stresses its importance, but its role in future conflict is less emphatic. Intuition is a vital necessity for the prosecution of successful command and control functions, and its past prominence and present influence will help to advance its criticality to future combat operations.

Two Fighters: Forrest and Patton

The history of intuition masterfully used to make combat decisions in our Army begins at the Army's inception and extends through the Persian Gulf War. From the superb leadership of Dan Morgan at the Battle of Cowpens in 1781,[109] to numerous instances in Operation Desert Storm, no two situations were precisely similar, but all were the same in process and result. Decisions had to be made, intuition was used as the basis of those decisions, and a level of tactical success resulted.

The exploits of Nathan Bedford Forrest during the American Civil War and the brilliant intuitive skills of George S. Patton, Jr. during World War II are worthy examples to view in which intuition's distinguished place in our history is confirmed. Volumes of work have been written concerning the details of their combat performances and this paper will not summarize the specifics of any particular action. However, the generalization of their demonstrated intuitive abilities highlights the historical depth and lasting importance of this fundamental leader skill.

The tactics and eventual "generalship" of Nathan Bedford Forrest during the American Civil War are an interesting contrast between learned intuition and intuition gained through born traits. Forrest was officially not a U. S. Army officer and did not

spend his entire career in the military—his only experience was in the Confederate Army for the four years of the war. Yet, an examination of his war experiences show that he exhibited intuitive battlefield skills which were highly developed and practical.

Forrest enlisted in the Confederacy as a private in 1861 after serving for years as a farmer and slave trader.[110] Known infamously as the "Wizard of the Saddle," Forrest rose quickly through the ranks to attain the rank of Lieutenant General by the war's end, the only person on either side to attain that rank after enlisting as a private. He was a cavalryman who personally killed thirty Union soldiers in hand to hand combat, had twenty-nine horses shot from under him, and extensively used offensive tactics. His famous statement that, "War means fightin' and fightin' means killin'," accurately describes his tactical methodology. [111]

Forrest's offensive mind set overshadowed his acute sense of terrain appreciation and what was essentially a refined skill of *coup d'oeil*. Presumably gained through his Southern upbringing and rural background, Forrest's *coup d'oeil* enabled him consistently to use terrain to his advantage throughout the war. At each level he commanded, Forrest always managed to find the most advantageous terrain from which to fight the enemy, often at a moment's notice and often while under contact. He had only six months of formal schooling and no military education other than the experience that he gained while serving in the Confederacy, so his tactical intuitive sense of the terrain can be attributed to natural talent, lessons learned from early mistakes, and his civilian experiences as an outdoorsman. [112]

Intuitive decisions before and during battle were also one of Forrest's trademarks. "His unfailing fury was matched by a canny single-mindedness," wrote biographer Jack

Hurst. "His decisions under fire were generally quick and brilliant, as if he anticipated every battle development."[113] Forrest actually appeared to exhibit the process of "incubation" many times, temporarily displacing himself mentally from the current, active situation in order to retrieve the subconscious thoughts which arose in the intuitive process. During these periods, he would sit motionless or pace in circles, performing what his subordinates called "cerebral planning."[114]

Forrest was an extremely confident leader who fought war to the fullest and sought the ultimate final triumph—individual and collective survival. He trusted in his own counsel (his intuition), remained focused on the mission at hand, and followed his own set of rules in nineteenth century cavalry warfare.[115] His intuitive skills, combined with his masterful tactical art, were best exhibited by him in the Battle of Brice's Crossroads in June of 1864, when his 4,800 troops completely routed a Union infantry-cavalry force of 8,300 troops.[116] Forrest's acute sense of terrain appreciation and his ability to seize instantly upon the criticalities of any battlefield situation are hallmark traits of tactical intuition.

General George S. Patton, Jr. is arguably the greatest warrior in American history. Unlike Forrest, he was a career soldier who was West Point educated and firmly grounded in a personal and professional military education.[117] Combat not only brought Patton the fame that he so fervently desired, but concurrently jump-started his legions of military followers on a quest to unlock his methods' secrets. Two aspects of his persona shine prominently: a personal commitment to military education and an innate intuitive sense in battle.

Patton was a voracious reader who spent almost every night reading or writing on subjects pertaining to the military art. This preoccupation was founded on his personal belief that military education was an important component of a professional officer's comprehensive development. In 1922, he wrote:

> "To be useful in battle, military knowledge like discipline must be subconscious. The memorizing of concrete examples is futile for in battle the mind does not work well enough to make memory trustworthy. One must be so soaked in military lore that he does the military thing automatically. The study of history will produce this result. The study of algebra will not."[118]

As a cadet at West Point he realized the usefulness of history and the importance of vast military knowledge as the building block for competence in war. His writings at that time show clearly that he comprehended that success in war depended upon a leader having the intuitive ability to derive logical solutions from an extensive knowledge database. "I believe that in order for a man to become a great soldier," he wrote in his personal notebook at West Point, "it is necessary for him to be so thoroughly conversant with all sorts of military possibilities that when ever an occasion arises he has at hand with out effort on his part a parallel." He continued:

> "To attain this end I think that it is necessary for a man to begin to read military history in its earliest and hence crudest form and to follow it down in natural sequence permitting his mind to grow with his subject *until he can grasp with out effort the most abstruce* [sic] *question of the science of war because he is already permiated* [sic] *with all its elements*" (emphasis mine).[119]

Patton's combat records aptly reflect that he achieved this end. Whether chasing Pancho Villa in Mexico, leading America's first tank units in World War I, or throughout his glorious exploits of World War II, his tactical actions resonate with intuitive decisions derived from his exceptionally vast professional knowledge base. He was audacious,

bold, and violently fast during offensive operations—qualities born of his education and dependent upon his intuitive process. As Martin Blumenson wrote:

> "Thoroughly grounded in the means of waging war in his time, he had an intuitive perception, a sixth sense, of enemy capacities and intentions. His predictions—for example, at Salerno, Anzio, and the Ardennes—proved remarkably accurate . . . He was an authentic military genius."[120]

Patton himself recognized that he possessed exceptional intuition, and once wrote to his wife that "I have a sixth sense in war as I used to have in fencing."[121] He later quipped: "I'm going to be an awful irritation to the military historians, because I do things by sixth sense. They won't understand . . ."[122] This "sixth sense" enabled him to instantly digest terrain complexities, weapon capabilities and limitations, map distances and road movement schemes, troop disposition requirements, and enemy intentions. "The sureness with which he grasped a tactical situation and the deftness with which he moved to handle it were like a fine surgeon's diagnostic perception and instant action," wrote Blumenson.[123]

Patton's intuitive thought sometimes occurred, as with Forrest and many other intuitive thinkers, during incubatory periods. He claimed that the concept for his Palatinate campaign in February of 1945 occurred in this fashion after awakening suddenly from sleep,[124] and undoubtedly many of his decisions during the planning and execution of operations in North Africa, Sicily, and especially the Ardennes counterattack in 1944 happened similarly. Presumably none would have happened, however, had this extraordinary soldier not possessed huge amounts of learned data from which his talented sense of war could tap.

Patton was imaginative, intuitive, resolute, and confident. His military genius was surely partly a result of natural talent, but also a product of intense study and experience.

The knowledge he gained through these means provided him with the information necessary for intuitive decision making and successful tactical command. The acquired and natural intuition of this expert soldier enabled him to achieve success and fame on the battlefield, and today provides us with sterling examples of combat command that continue to inspire our doctrine and education.

Tactical Intuition: The Core of Battle Command

Tactical command of ground forces remains a complicated endeavor largely because of war's inherent complexities.[125] There is some "science" involved in this process, but command consists mainly of the application of certain human talents through developed faculties—all habitually artistic. The tactical command of forces in the U. S. Army is known today as "battle command." Intuition plays a vital role in the concept of battle command, and serves as the basis of most critical leader skills which battle command encompasses.[126]

The battle command concept was developed by General (Retired) Frederick Franks, Jr., while he was commanding the U. S. Army Training and Doctrine Command (TRADOC). In his reasoning for pressing this term into the force, Franks asserted that emphasis was needed on the skills inherent to battle command, because "we must always remember the human dimension of battle. Battle results are final. When it's over, it's over, and the memories are frozen in time. We are talking about commanding soldiers and units in the tough, unforgiving arena that is land battle."[127]

According to Franks, battle command means "seeing what is now, visualizing the future state or what needs to be done to accomplish the mission and then knowing how to

get your organization from one state to the other at least cost against a given enemy on a given piece of terrain."[128] Current Army doctrine reflects this definition.[129] Interestingly (and unfortunately), the Army's new cornerstone operations manual for the twenty-first century (in final draft form) makes no mention of battle command, referring instead to "characteristics of command."[130]

The primary components of battle command directly dependent upon the commander's intuition are decision making, visualizing, concept formulation, and battlefield awareness—"selecting the critical time and place to act, and knowing how and when to make adjustments during the fight."[131]

Sound decision making underlies all that combat command entails.[132] In order to be effective and successful, tactical leaders must first realize that a decision has to be made, determine the timeliness required of the decision, quickly and efficiently weigh the relative merits of possible courses of action, and finally decide and act. The rapid process of intuition permits this decision cycle to evolve fluidly. Visualization and concept formulation likewise rely upon intuition, as they are the art of conceptualizing and understanding a future state or condition based upon current tangible and intangible factors, and then developing a plan by which that future state can be achieved.[133] They are the cornerstone of battle command, reliant upon creativity, clear thought, judgment, experience, and the intuitive sense to maximize them coherently into conscious thought and action.[134]

Finally, battlefield awareness is the battle command component which relies most heavily upon the intuitive process. It is derived though education and experience, and results in a "quick access to a whole bank of experiences and lessons that don't have to be

gone through individually or in detail, but [as] a result of a lot of reflection and conviction."[135] This faculty is more than situational awareness and knowledge of physical forces on the battlefield. Rather, identifying patterns and relationships, understanding the critical points in time and space, and recognizing opportunities for decisive action are all important aspects of this skill. As one great American soldier, leader, and thinker said:

> "There's always going to be a need for fast tactical response. And really it comes down . . .[to] the necessity for commanders to act with imperfect knowledge . . . There's two parts of it, I guess. One, there's the interpretation of what's there and then, what we can do with it. Again, talented tacticians are going to see possibilities that other do not because they understand the workings of the force. And they may look at a map and say 'here's something that's possible' . . . So even if the situation is fairly clear, the faculty of grasping the situation and acting quickly is going to remain important."[136]

This instinctive and expert talent draws its actions or decisions into realization through the intuitive process, firmly grounded in experience.

Intuition's crucial contribution to combat success is recognized by the Army through the concept of battle command. Although the terms we use to identify its functions may change in future doctrinal generations, its prominence will not. The Army today relies upon skilled tactical leaders who can quickly observe, think, and act during intense combat operations. This is the root essence of the intuitive process in battle command, and our Army should accept nothing less in the qualifications of men we need to fight and win our next war. J. F. C. Fuller's words stand alone: "A man who cannot think clearly and act rationally in the bullet zone is more suited for a monastery than the battlefield."[137]

Intuition and the Future Force

Intuition's role as a critical component of tactical command is secure as long as war remains a violent clash of wills, full of ambiguity and uncertainty, and fought directly or indirectly by imperfect men. This will indeed be the case. Change is inevitable in the conduct of war, however, as technological advances in weapons, communications, and digitization, among others, will transform in some manner the way in which wars are fought. Leaders must change in like fashion, but their human characteristics and psychogenic[138] functions, among them the intuitive process, will remain substantially the same. "Weapons technology is only the hardware of warfare," wrote one author, "of equal importance is the software which governs its use and which takes many forms."[139] The human participant is this "software."

The world environment is complex and dynamic, thus estimates of any future conflict's scope and nature are at best speculative. Some predictions maintain that future war will be largely urban and characterized by unorganized bands of quasi-professional soldiers and thugs.[140] Others keep a less radical view and merely foresee future conflict involving adversaries fighting technologically-based battles of great destruction, confusion, and fear.[141]

Probable technological developments reflect that the conduct of future war will be influenced mostly through five trends that will directly affect land combat: the increased lethality and dispersion of weapon systems; increased volume and precision of fires; the integration of advanced technologies; increased mass and effects of munitions; and the improved invisibility and detectability of the belligerents.[142] The Army is organizing to meet this probability, but again—the nature of war, and man's role, will remain largely

unchanged. As one author team wrote concerning future conflict: "The artistic side of war will remain: creativity, intuition, leadership, motivation and decision-making under conditions of limited information. These will never lose their importance, for they describe war's essence." [143]

On a large scale, the future Army will meet strategic requirements through the conduct of six "patterns of operations:" force projection, force protection, information dominance, shaping battlespace, decisive operations, and sustainment.[144] Operationally, the Army will deploy rapidly with robust sustainability and decisive military power. The goal of tactical units in this future war is to dominate battlespace through total control of the operation's nature, and tempo. Initiative and relentless momentum remain essential to success in these predominantly offensive operations, which have the goal of destroying the enemy's coherence through an asymmetric advantage in order to achieve his physical or moral destruction. Success is exploited to complete the victory.[145]

This concept for future war occurs, of course, in war's predictably unforgiving environment. Every possible problem can and will occur during these future operations just as they have throughout the history of our battlefield successes. Time will roll-on in contrast to our necessities, units will become disoriented, leaders will be confused and killed, weather will foil our plans at the most inopportune moments, equipment will malfunction, and the largest certainty of them all—an uncooperative enemy—will attempt to thwart any advantage we gain and simultaneously impose their will upon our force. Revolutionary changes in technology, doctrine, and organization cannot erase these facets of war as constant sources of friction.

Competent leaders are the sole means of steadying the keel in this type of tactical environment. Leadership presence is insufficient; leaders must be tactically smart and rationally calm under fire. They must understand the intricacies of their combat systems and the endurance thresholds of their men. They must be flexible in thought and action and capable of solving complex, ambiguous, problems with little or insufficient data. Above all, they must lead and command naturally without having to pause or stop to consider what should be done—thereby reflecting expertise in the profession of arms. This is possible only through the conviction of will and the sharpness of their minds—by intuitive thought and instinctive behavior.[146]

V. CONCLUSION

In the end, it could be argued, all great commanders are the same. They adapt the technology of their times in a highly personal, reflective space where machines can extend, but never supplant, the human dimension of their leadership . . . there will always be a human dimension to leadership. The most successful commanders will be those who possess a few basic traits: courage, intellect, and a cultivated sense of intuition.[147]

Current speculation by many intelligent thinkers implies that technology, information superiority and automated command and control processes are the sole keys to land battlefield supremacy in the twenty-first century. One author goes so far as to predict that American tank commanders in the next century will be better prepared than those of today because their training will consist more of virtual-reality experiences than actual "muddy boots" training.[148] Historical and theoretical precedents reasonably counter these arguments and strongly advocate that the human element, properly trained and disciplined, is decisive in war. Warfare's legacy illuminates the tactical commander's intuition and decision making ability as critical to past, present, and future combat operations. Military evidence emphatically affirms that the commander's intuition is critical to combat success.

Intuition is neither mystical, magical, nor individually exclusive to a privileged few. It is a developed mental faculty which involves the automatic retrieval and translation of subconsciously stored information into the conscious realm in order to make decisions and perform actions. Organized databases of knowledge gained through education—experiences, memorization of data, sensations, and relationships—are the fundamental building blocks upon which intuitive thought routinely functions. An open mind,

uninhibited imagination, and limitless creativity combine to form the enhanced mental environment in which its potential is maximized.

Tactically, intuition enables leaders to make and implement decisions faster than an enemy counterpart and actualizes the difference between "competence and incompetence, victory or defeat."[149] It affords the force as a whole, through the leader's skill, to gain a decisive advantage through increased tempo, sustained initiative, and bold action.[150] It provides the window for viewing future activities in light of current operations and thus minimizes some of the uncertainties in war. Intuition provides logical alternatives to complex problems, a sense of order to disorder, and similarities to previously unfamiliar circumstances. It is the essence of what we define as battle command, visualization, and situational awareness—it is indeed the idealization of tactical leadership.

Tactical intuition's importance demands that it be cultivated and improved throughout our force. Not every officer has the capability to be truly proficient in tactical leadership and all of the difficult requirements of battle command. But for the officers that do, their intuitive potential can be developed and refined.[151] The method by which this can be achieved is conceptually simple: most importantly, repetitive troop assignments beginning as a lieutenant, particularly from the field grade ranks on; demanding and realistic collective training in non-virtual reality environments which encourages original, audacious, and creative solutions to tactical problems; substantive, concentrated professional education, founded on military history and theory, tactical and operational art, and the environment of war; and broad personal education that breeds creative thought, focusing on the moral and physical environments of war and other subjects pertaining to the military profession.

The current Army professional schooling method for field grade officers of "trying to paint the whole officer corps lightly with tactical information" does not develop intuitive commanders with advanced tactical understanding, firmly grounded in the art of war.[152] The talents and efforts of competent instructors who understand fighting and maneuver should not be wasted on officers who will never serve in ground combat units in battle. As one author astutely wrote: "Combat leaders will have the same amount of battlefield vision as they have warfighting expertise. Unfortunately, the Army's current leader development program develops 'competent and confident' leaders, not warfighting experts."[153]

Advanced technology is not the final answer in our quest for definitive future wartime success, particularly at the tactical level of war. The human element is often slighted in this search for certain victory, and quite possibly technology may cause us to reach a state of "paralysis by analysis" in which intuitive skills are neglected that have historically given commanders the advantage over their enemy.[154] This potential tragedy must never be realized.

The human mind's intuitive process is irreplaceable as the determinant of success in tactical combat operations. In order to be effective, it must be developed, improved, and exercised. Since the Army's fundamental business is winning wars in the confusion of battle, the Army's legacy and present charter obligate it to provide courageous and competent officers capable of negating friction's perils and leading its sons into the hell of war. Technology assists in this endeavor, but is merely an ancillary agent. The ultimate weapon is the American combat leader and he must not be shunned as irrelevant in a high technology age. This is no light task in today's environment. "The future commander

may eventually sit before a console," wrote Robert Doughty, "but he will never be a technician, and his profession will never be a trade."[155] As the millennium approaches, the Army's senior forward thinkers and decision makers should heed the words of their own impending doctrine, which states:

> "Military operations demand both art and science from the leaders who wage it . . . The artistic side of military operations endures: creativity, intuition, leadership, innovation, and decision making under conditions of incomplete information. They will never lose their importance, for they describe the essence of military operations."[156]

APPENDIX

Bastick's Intuition Properties[157]

No.	*Intuition/Insight Property*
1	Quick, immediate, sudden appearance
2	Emotional involvement
3	Preconscious process
4	Contrast with abstract reasoning
5	Influenced by experience
6	Understanding by feeling--emotive not tactile
7	Associations with creativity
8	Associations with egocentricity
9	Intuition need not be correct
10	Subjective certainty of correctness
11	Recentring
12	Empathy, kinaesthetic [sic] or other
13	Innate, instinctive knowledge or ability
14	Preverbal concept
15	Global knowledge
16	Incomplete knowledge
17	Hypnogogic reverie
18	Sense of relations
19	Dependence on environment
20	Transfer and transposition

NOTES

[1] War Department, Field Manual (FM) 100-5, Field Service Regulations, *Operations* (Washington, D.C.: GPO, 15 June 1944), 27.

[2] Eliot Cohen, "A Revolution in Warfare," *Foreign Affairs* 75, no. 2 (March/April 1996), 45. Cohen states that, "Future warfare may be more a gigantic artillery duel fought with exceptionally sophisticated munitions than a chesslike game of maneuver and positioning."

[3] Quoted in an *Army Times* article written by Sean Naylor, "Forget High Tech, the Human Voice will Still be Heard" (23 October 1995), 32, one U. S. Army battalion commander who participated in Exercise FOCUSED DISPATCH, an Advanced Warfighting Experiment held at Fort Knox, KY, said: "Command presence no longer has to be up forward in the fight. Command presence in the future may not be thought of in geographical terms . . . Instead, it may consist simply of those occasions when the commander reverts from digital communications to FM radio."

[4] Michael I. Handel, *Masters of War: Sun Tzu, Clausewitz, and Jomini* (Portland, OR: Frank Cass, 1992), 9-10. Handel's argument for the importance of the human element in war includes: "It can, in fact, be argued that no modern war has been won by superior technology alone . . . Of course, this does not mean that modern weapons technology is unimportant, simply that technological factors have never determined the outcome of modern wars . . . technology is not a panacea and that, at best, superior military technology is a necessary but never a sufficient condition to win wars." Another similar view was stated by Stephen Blank in an article entitled "Preparing for the Next War: Reflections on the Revolution in Military Affairs," *Strategic Review* 24, no. 2 (Spring 1996), 18, in which he states: "Technology alone cannot guarantee victory. Future military success does not only mean obtaining high-tech platforms, but also effectively optimizing and organizing forces to supply, use, and command them." In an excellent rebuttal to the arguments of techno-warriors, "Preparing for War in the 21st Century," *Parameters* (Autumn 1997), 5, Lieutenant General Paul Van Riper and Major General Robert H. Scales, Jr. claim that: "For those placing unbridled faith in technology, war is a predictable, if disorderly, phenomenon, defeat a matter of simple cost/benefit analysis, and the effectiveness of any military capability a finite calculus of targets destroyed and casualties inflicted . . . Real war is an inherently uncertain enterprise in which chance, friction, and the limitations of the human mind under stress profoundly limit our ability to predict outcomes."

[5] Martin Van Creveld's discussion of technology's impact on war in *Technology and War* (New York: Macmillan/The Free Press, 1989), 314, 320, is particularly relevant to this discussion. He writes: "When the chips are down, there is no 'rational' calculation in the world capable of causing the individual to lay down his life. On both the individual and collective levels, war is therefore primarily an affair of the heart. It is dominated by such irrational factors as resolution and courage, honor and duty and loyalty and sacrifice of

self", 314; and: "Since technology and war operate on a logic which is not only different but actually opposed, the conceptual framework that is useful, even vital, for dealing with the one should not be allowed to interfere with the other. In an age when military budgets, military attitudes, and what passes for military thought often seem centered on technological considerations and even obsessed by them, this distinction is of vital importance", 320.

[6] According to U. S. Army FM 100-5, *Operations* (Washington, D.C.: GPO, 1993), 6-3, at the tactical level of war "battles and engagements are planned and executed to accomplish military objectives assigned to tactical units or task forces . . . Tactics is the art and science of employing available means to win battles and engagements." Tactical units are Corps-sized units and below. For this paper's purpose, "tactical leader" refers to Division commanders and below.

[7] *Webster's New Collegiate Dictionary*, (Springfield, MA: G. and C. Merriam Co., 1981), 602. Another dictionary definition is: "Intuition is the act of faculty of knowing or sensing with the use of rational processes; immediate cognition . . .", *The American Heritage Dictionary of the English Language*, (Microsoft Bookshelf, version 7, CD-ROM, 1996).

[8] Handel, 120-121.

[9] "Evolutionary" change is narrow in scope, and usually involves the advancement of one component of the military environment: technology, tactics, or doctrine, for example. "Revolutionary" change is a comprehensive transformation of the conduct of war. See note 11 below.

[10] Battle Command is defined as "the art of battle decision making, leading, and motivating soldiers and their organizations into action to accomplish missions . . . [it] consists of visualizing the current state and desired future end state for an operation and includes deciding how to get from one to the other at least cost to the soldier." Department of the Army, Training and Doctrine Command (TRADOC) Pamphlet 525-70, *Battlefield Visualization Concept* (Fort Monroe, VA: 1995), 3-1.

[11] Earl H. Tilford, Jr., "The Revolution in Military Affairs: Prospects and Cautions" (Carlisle, PA: Strategic Studies Institute, U. S. Army War College, 1995), 1. Tilford refers to a Department of Defense Office of Net Assessment document which defines an RMA as "a major change in the nature of warfare brought about by the innovative application of technologies which, combined with dramatic changes in military doctrine, and operational concepts, fundamentally alters the character and conduct of operations." This is generally the essence of most RMA definitions. Alvin and Heidi Toffler write in *War and Anti-War* (New York: Little, Brown, and Company, 1993), 29, that "A true revolution goes beyond that [technological improvement] to change the game itself, including its rules, its equipment, the size and organization of the 'teams,' their training, doctrine, tactics, and just about everything else." In an article entitled "The Future of

Military Affairs: Revolution or Evolution?", *Strategic Review* (Spring 1996), 31-32, Philip Ritcheson contends that "military revolutions . . . do share several common features . . . . First, and most important, new technologies must be complemented by doctrinal and organizational adaptations . . . . a second feature of the RMA in the past is the magnitude of change compared to the former state of military affairs . . . . Two factors influence this outcome: the interplay among technology, doctrine, and organization and the changing relationship between time and space which requires less time to react to events affecting a larger battlespace."

[12] Ardant du Picq, *Battle Studies*, trans. John N. Greely and Robert C. Cotton, in *Roots of Strategy*, Book II (Harrisburg, PA: Stackpole Books, 1987), 135.

[13] Historian Williamson Murray, in "War, Theory, Clausewitz, and Thucydides: The Game May Change but the Rules Remain," *Marine Corps Gazette* (January 1997), 63, espoused the relativity of past military theory to the present world environment. He wrote that: "Any theoretical understanding of war must arise out of the real acts and occurrences of human conflict; one must not impose on the world theoretical constructs arrived at independently of experience." He added: "The fundamental problem with most theories of war in our century has been the fact that theorists have sought simple, easy, comfortable answers to the intractable and often insoluble problems raised by war", 68.

[14] Robert F. Baumann, "Historical Perspectives on Future War," *Military Review* 77, no. 2 (March/April 1997), 40. Another excellent discussion on the benefits of historical analysis for predicting war's future is found in Trevor Dupuy's *Understanding War* (New York: Paragon House, 1987), xxv-xxvi. He writes: "Some argue that military history is too inconsistent to be useful as a basis for the formulation of reliable hypotheses . . . this argument is fallacious. The patterns of history are clear. While there is some influence of chance on the battlefield, it generally affects both sides equally, and military combat is as close as being deterministic as it is possible for any human activity to be . . . The value of military history is that, when analyzed objectively and scientifically, it permits us to project forward the trends of real past experiences."

[15] Murray, 63.

[16] Trevor Dupuy, *The Evolution of Weapons and Warfare* (Fairfax, VA: Hero Books, 1984), 287. Dupuy writes that "it is evident that the story of warfare is an account of continual change." "The alterations have been in technology, which has changed weapons, which then have changed tactics. Yet . . . there are certain constants in war, and these constants are at least equally as important as the changes . . . . First is the objective of war . . . . Second is the way in which wars are fought . . . . Third—and the essential constant in war—is the unchanging nature of man."

[17] Tony Bastick, *Intuition: How We Think and Act* (New York: John Wiley and Sons, Inc., 1982), xxiii.

[18] Hubert L. and Stuart E. Dreyfus, *Mind Over Machine: The Power of Human Intuition and Expertise in the Era of the Computer* (New York: Macmillan, 1986), xvi.

[19] Napoleon Bonaparte's maxim #115, as quoted in *The Military Maxims of Napoleon*, ed. Thomas R. Philips, in *Roots of Strategy* (Harrisburg, PA: Stackpole Books, 1985), 440.

[20] Beryl Benderly, writing in "Everyday Intuition" in *Psychology Today* (September 1989), 36, reported on the intuition research of Nobel laureate Herbert Simon of the Carnegie Mellon University. Simon's research rejected the view that intuition was a "inexplicable personal gift."

[21] Bastick, 1.

[22] Jose A. Picart, "Expert Warfighters with Battlefield Vision," *Military Review* 71, no. 5 (May 1991), 52.

[23] Bastick, 25.

[24] Karl G. Albrecht, *Brain Power* (Englewood Cliffs, NJ: Prentice Hall, 1980), 28. Albrecht is also a strong advocate for the logic inherent to intuition, countering those researchers who claim that intuitive thought is either irrational or illogical. He wrote: "I believe we routinely perceive intuitively, at a level beyond our immediate verbalization processes, and we routinely reason intuitively. In this regard, I don't consider it entirely accurate to speak of 'intuition' and 'logic' as two opposite forms of thought . . . I prefer to consider what we call 'logical thought' as merely a verbal translation of the intuitive processes by which we do the major part of our thinking . . . If this concept of intuitive thinking makes sense, then developing intuitive skills amounts to listening to preconscious thoughts and sometimes verbalizing them", 271.

[25] Benderly, 36. The psychologist referred to is Professor Robert Glaser of the University of Pittsburgh, who studied the correlation between intuition and expertise. His research, as reported by Beverly, involved the study of experts in the fields of medical diagnosis, stock evaluation, engine repair, social analysis, and reading. Glaser found that these experts made intuitive decisions and performed their tasks based upon "hundreds and thousands of hours of learning and experience."

[26] Bastick, xxiii.

[27] Ibid., 77.

[28] Ibid., 61.

[29] Charles T. Rogers, "Intuition: An Imperative of Command," *Military Review* 77, no. 3, (May/June 1996), 50.

[30] Hubert and Stuart Dreyfus, *Mind Over Machine*, 28-29.

[31] Ibid., 10. In their further defense of the human mind over computers, they add: "Our bottom line is that computers as reasoning machines can't match human intuition and expertise, so in determining what computers should do we have to contrast their capacities with the more generous gifts possessed by the human mind . . .", xvii.

[32] Ibid., 27.

[33] Hubert L. Dreyfus, *What Computers Still Can't Do: A Critique of Artificial Reason* (Cambridge, MA: The MIT Press, 1972), 3.

[34] Ibid., xxviii.

[35] Albrecht, 25.

[36] John Adair, *Training for Decisions* (London: Macdonald and Company, 1971), 22-23.

[37] Albrecht, 28.

[38] Peter Senge, *The Fifth Discipline: The Art and Practice of the Learning Organization* (New York: Doubleday, 1990), 365.

[39] Frances E. Vaughan, *Awakening Intuition* (Garden City, NY: Anchor Books, 1979), 4.

[40] Hubert and Stuart Dreyfus, *Mind Over Machine*, 28.

[41] Dreyfus, *What Computers Still Can't Do*, 243.

[42] B. C. W. McClean, "Intuition in Modern Command Philosophy," *Military Review* 75, no. 4 (September/October 1995), 97. McClean writes: "A mental condition called incubation exists from which intuitive thoughts tend to flow. Incubation is the period when one is away from a particular activity or concern and, without any conscious effort, the answer to a critical issue suddenly occurs . . . Researchers suggest incubation occurs momentarily in the developed intuitive mind during the activity requiring the decision." A thorough explanation of this phenomenon is contained in Peter H. Lindsay and Donald A. Norman's textbook *Human Information Processing*, 2nd ed.(New York: Academic Press, 1977), 591. They write: "Considerable time may pass between the initial phases of active, conscious work on a problem and the arrival of a solution. The solution sometimes arrives far after the initial phase of work, sometimes quite unexpectedly . . . The time lapse between the initial activity and the solution, during which no active work on the problem

seems to be taking place, is called the period of 'incubation.' Incubation periods seem only to be successful in leading to solutions when preceded by a considerable amount of hard work on the problem . . . All the information necessary for the solution must already exist within the memory structures of the person."

[43] McClean, 97.

[44] Vaughan, 3.

[45] Lamar Tooke and Ralph Allen, "Strategic Intuition and the Art of War," *Military Review* 75, no. 2 (March/April 1995), 16.

[46] Ibid., 14.

[47] Ibid., 18.

[48] Bastick, 84.

[49] Albrecht, 18.

[50] Lindsay and Norman, 605-607.

[51] Betty Edwards, *Drawing on the Right Side of the Brain*, revised ed.(Los Angeles, CA: Jeremy P. Tarcher, Inc., 1989), 29-30, 35.

[52] Albrecht, 22.

[53] Ibid., 22-23.

[54] An interesting side note on "hemisphere dominance" is discussed by Vaughan on page 51 of her work. She reports on the research of Robert Ornstein of the Langley Porter Neuropsychiatric Institute and professor at the University of California Medical Center in San Francisco. Ornstein's research contends that Western thought is left side dominated—oriented toward rational, verbal, linear thinking, while Eastern (Oriental) thought is "primarily influenced by the intuitive, nonlinear mode attributed to the right hemisphere."

[55] McClean, 96.

[56] Albrecht, 23.

[57] Benderly, 36.

[58] Ibid., 38.

[59] David G. Chandler, *The Campaigns of Napoleon* (New York: Macmillan Publishing Co., 1966), xxxv.

[60] Murray, 68.

[61] Dupuy, *The Evolution of Weapons and Warfare*, 1. Dupuy writes that history's first recorded battle took place between tribes of Palestine and Syria against the Egyptian pharaoh Thutmosis III in 1469 B.C., but that *homo sapiens* probably used weapons in the search for basic needs in life and to satisfy aggressive tendencies.

[62] Plinio Prioreschi, *Man and War* (New York: Philosophical Library, Inc., 1987), 6. Prioreschi writes: "Man is naturally inclined to avoid hardship, pain, insecurity, and sorrow . . . Man instinctively seeks self-preservation and war endangers his life, man cherishes property and war destroys it."

[63] Henry E. Eccles, *Military Concepts and Philosophy* (New Brunswick, NJ: Rutgers University Press, 1965), 257.

[64] Peter Paret, *Clausewitz and the State* (Princeton, NJ: Princeton University Press, 1985), 203.

[65] Carl von Clausewitz, *On War*, ed. and trans. By Michael Howard and Peter Paret, 1984 ed. (Princeton, NJ: Princeton University Press), 100.

[66] For an interesting theory on friction's future impact, see Barry D. Watts' "Clausewitzian Friction and Future War," *McNair Paper #52* (Washington, D. C.: Institute for National Strategic Studies, National Defense University, October 1996). Watts thesis is that friction will continue to challenge even the most perfectly laid plans, expert technology, and resolute commanders.

[67] Paret, 202-203.

[68] Clausewitz, 101. From chapter 3 of book 1, "On Military Genius."

[69] Ibid., 102. From chapter 3 of book 1, "On Military Genius."

[70] Ibid., 108. From chapter 3 of book 1, "On Military Genius."

[71] Ibid., 147. From chapter 2 of book 2, "On the Theory of War."

[72] Paret, 200. Paret asserts that Clausewitz' experiences as a teacher were the foundation of these beliefs.

[73] Clausewitz, 146. From chapter 2 of book 2. The entire passage eloquently reads: "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 Conde' or a Frederick."

[74] Ibid., 262. From chapter 11 of book 4, "The Battle: Use of the Battle."

[75] Ibid., 71. This was written by Clausewitz in an unfinished note, presumably written in 1830. Published in this version of *On War* prior to the text proper.

[76] Ibid., 112. From chapter 3 of book 1, "On Military Genius."

[77] Hugo Baron von Freytag-Loringhoven, *The Power of Personality in War*, trans. Oliver Spaulding (Harrisburg, PA: Military Service Publishing Co., 1955), 94.

[78] Clausewitz, 110. From chapter 3 of book 1, "On Military Genius."

[79] Ibid., 109. From chapter 3 of book 1, "On Military Genius."

[80] Ibid., 514. From chapter 30 of book 6, "Defense of a Theater: Where a Decision is not the Objective."

[81] Ibid., 185. From chapter 3 of book 3, "Moral Factors."

[82] Ibid., 213. From chapter 14 of book 3, "Economy of Force."

[83] Ibid., 585. From chapter 3 of book 8, "Scale of the Military Objective and Effort to be Made."

[84] Ibid., 578. From chapter 1 of book 8, "War Plans—Introduction." He wrote: "When all is said and done, it really is the commander's *coup d'oeil*, his ability to see things simply, to identify the whole business of war completely with himself, that is the essence of good generalship. Only if the mind works in this comprehensive fashion can it achieve the freedom it needs to dominate events and not be dominated by them."

[85] Department of the Army, The U. S. Army Infantry School, "Coup d'Oeil," *The Infantry School Mailing List* 16, (1938), 108-109. This interesting study primarily uses a series of historical vignettes, many from the American Civil War, as a basis of analysis. The process and employment of tactical intuition is indirectly described throughout. Its various descriptions of this trait claim that *coup d'oeil* is "an instantaneous understanding of the uses of terrain to suit a particular military purpose . . . This stroke of the eye, this ability during the stress of battle to pick out promptly the one critical feature among all others, is something apart from long deliberation and strategic analysis", 97; and: "But what exactly is this coup d'oeil? Analysis of the examples indicates that roughly it is composed of two

parts. The first is the ability to comprehend the larger tactical pattern and see in a flash how a piece of local terrain fits into this pattern; the second is speed of decision and action . . . Surely, the first element of coup d'oeil is to see and this is a purely intellectual quality . . . The other . . . is the action . . . And here we step out into a field that is not purely intellectual. We are dealing with moral courage, initiative, and a host of other intangible qualities. It is not enough to see, one must act", 108-109; and finally, in summarizing their conclusions on *coup d'oeil*, the study reads: "The mind must be able to function under stress; it must see the nature of the problem, the relation of the part to the whole, and near-by terrain to the surrounding terrain, and then use the ground so conceived to assist the military situation and do it instantly. That is coup d'oeil.", 111.

[86] Jay Luvaas, ed. and trans., *Frederick the Great on the Art of War*, reprint, originally published in 1966, The Great Commanders Series (Pennington, NJ: Collectors Reprints, 1995), 141.

[87] Ibid., 142.

[88] Ibid., 290.

[89] Ibid., 342. Frederick wrote: "To imagine a man who has attained perfect knowledge of any science whatever would be as ridiculous as to pretend that fire quenches thirst and that water satisfies hunger. To inform the hero that he has been guilty of error is but to make him remember he is a man."

[90] Ibid., 343.

[91] Thomas R. Philips, trans., *The Instruction of Frederick the Great for His Generals*, in *Roots of Strategy*, (Harrisburg, PA: Stackpole Books, 1985), 342.

[92] Marshal Maurice de Saxe, *My Reveries Upon the Art of War*, trans. by Thomas R. Philips, in *Roots of Strategy* (Harrisburg, PA: Stackpole Books, 1985), 296.

[93] Ibid., 294.

[94] Ibid., 296-297.

[95] du Picq, 65.

[96] Ibid., 135. He wrote: "The art of war is subjected to many modifications by industrial and scientific progress. But one things does not change, the heart of man. In the last analysis, success in battle is a matter of morale. In all matters which pertain to an army, organization, discipline and tactics, the human heart in the supreme moment of battle is the basic factor."

[97] Ibid., 238.

[98] Ibid., 121.

[99] Chandler, xxxv. He quotes Octave Aubry in stating that: "Napoleon possessed the greatest personality of all time, superior to all other men of action by virtue of the range and clarity of his intelligence, his speed of decision, his unswerving determination, and his acute sense of reality, allied to the imagination on which great minds thrive." In describing the characteristics of his genius, Chandler wrote: "Other characteristics incorporated in his genius were a fertile imagination, an intuitive sense, indomitable will power, and what General Camon terms 'firmness of soul'", xxxix; he continued: "For the rest, his unique ability was due to a combination of *genie et metier*, genius and professional competence, and sheer hard work", xl. Probably one of the greatest descriptions of Napoleon's genius is by Martin Van Creveld in *Command in War*, (Cambridge, MA: Harvard University Press, 1985), 102. In summarizing Napoleon's greatness, Van Creveld writes: "To know what one can do on the basis of the available means, and to do it; to know what one cannot do, and refrain from trying; and to distinguish between the two—that, after all, is the very definition of military greatness, as it is of human genius in general."

[100] Philips, ed., *The Military Maxims of Napoleon*, 441.

[101] Ibid., 430. Maxim #73.

[102] Ibid., 431. Maxim #77.

[103] Freytag-Loringhoven, 80.

[104] Ibid., 88.

[105] Handel, 136.

[106] James L. Stokesbury, in the introduction to the book he co-authored with Martin Blumenson, *Masters of the Art of Command* (New York: De Capo Press, 1975), 3.

[107] Baumann, 47.

[108] Vegetius, *De Re Militari*, Book I, 378; as quoted in *Leadership: Quotations from the Military Tradition*, Robert A. Fitton, ed., (Boulder, CO: Westview Press, 1990), 309.

[109] For a good generic overview of this action, see the prologue in W. J. Wood's *Leaders and Battles* (Novato, CA: Presidio Press, 1984), 8-30.

[110] Most of the information on Forrest here is derived from the biography written by Jack Hurst, *Nathan Bedford Forrest* (New York: Alfred A. Knopf, 1993).

[111] Ibid., 4-5.

[112] Ibid., 4-6.

[113] Ibid., 5.

[114] Ibid. Hurst writes that during one of these moments, Forrest's concentration was so intense, that "during one such outdoor walk, after being repeatedly interrupted by someone attempting to start a conversation, he knocked the man unconscious with a single blow of his fist and continued circling, stepping over the prostrate form each time his route brought him back to that place. Throughout it all, he said nothing."

[115] Ibid., 95.

[116] See Hurst, 178-195.

[117] Roger Nye, *The Patton Mind*, (Garden City Park, NY: Avery Publishing Group, Inc., 1993), 11. Nye called this the "life of the mind." To illustrate Patton's appetite for reading Nye states that: "By the time Patton went to fight in World War II he had without doubt read or heard of nearly every significant writing on mobile warfare that had been produced in English since the Great War, whether it had been written by advocates of cavalry, infantry, air power, or mechanization", 129.

[118] Ibid., 63.

[119] Ibid., 16-18.

[120] Martin Blumenson, "Patton," in *The War Lords*, ed. Field Marshal Sir Michael Carver, (Boston: Little, Brown, and Co., 1976), 567.

[121] Martin Blumenson, ed., *The Patton Papers*, volume II (Boston: Houghton Mifflin Company, 1974), 320. In a letter to his wife written on 11 August 1943, Patton wrote: "I have a sixth sense in war as I used to have in fencing, and besides I can put myself inside the enemies head and also I am willing to take chances."

[122] Carlo D'Este, *Patton: A Genius For War* (New York: Harper Collins Publishers, 1995), 708.

[123] Blumenson, *Patton Papers*, vol. II, 849. In describing his intuitive skills, Blumenson writes: "Quite apart from his understanding of soldiers, he knew intimately the weapons and equipment at his disposal, what they could do and how they were best employed. He estimated terrain and area, distances and road nets at a glance. He could place in his mind's eye without effort the ground accommodations needed by troop units. He could tell whether troops were well trained and ready for combat. The sureness with which he

grasped a tactical situation and the deftness with which he moved to handle it were like a fine surgeon's diagnostic perception and instant action."

[124] D'Este, 708. See also Blumenson, *Patton Papers* vol. II., 636. Blumenson writes: "Patton awakened for no reason at 3 a.m., February 6, and it suddenly occurred to him that if he got a breakthrough in either the VIII or XII Corps area—or in both—he might be able to launch two, possibly three armored divisions in a swift exploitation, thereby [quoting Patton] 're-enacting the Brest Peninsula show. Whether ideas like this are the result of inspiration or insomnia, I don't know, but nearly every tactical idea I have had popped into my head like Minerva and not as historians attempt to describe generals who work things out on paper in a laborious manner.'"

[125] Van Creveld argues in *Command in War*, 9, that command today is no more difficult than it was in the eras of our predecessors. "The functions of command . . . are eternal," he wrote, ". . . there is little reason to believe that the exercise of command as such has become more difficult since Alexander showed how it should be done."

[126] See Anthony Bohannon, "C^3I in Support of the Land Commander," in *Principles of Command and Control*, AFCEA/SIGNAL Magazine C^3I series, v.6, eds. Jon L. Boyes and Stephen Andriole (Washington, D. C.: AFCEA International Press, 1987), 181. Bohannon states that "human judgments, intuition, instincts, gut feelings and the like all have such a significant part in the land battle that they infect the whole business of command and control."

[127] Frederick M. Franks, Jr., "Battle Command: A Commander's Perspective," *Military Review* 77, no. 3 (May/June 1996), 11.

[128] Ibid., 14-15.

[129] See FM 100-5, Glossary-1. This manual defines battle command as: "The art of battle decision making, leading, and motivating soldiers and their organizations into action to accomplish missions. Includes visualizing current state and future state, then formulating concepts of operations to get from one to the other at least cost. Also includes assigning missions; prioritizing and allocating resources; selecting the critical time and place to act; and knowing how and when to make adjustments during the fight." This definition is essentially mirrored in TRADOC Pamphlets 525-70, *Battlefield Visualization Concept*, 525-200-1, *Battle Command Battle Dynamic Concept*, (Fort Monroe, VA: 1994), and the Battle Command Battle Laboratory's (Leavenworth) [BCBL] *Battle Command Techniques and Procedures* (Fort Leavenworth, KS: BCBL, 22 February 1993).

[130] FM 100-5, *Operations*, final draft to revised edition, (Washington, D. C.: GPO, 5 August 1997), pp. 8-2 to 8-6. It states: "Though command is an art rather than a science, characteristics exist that aid a commander's efforts to achieve success. The characteristics of successful command are leadership, professional knowledge, vision and intellect,

judgment and initiative, courage and resolve, self-confidence, the ability to communicate, and integrity and example."

[131] Ibid., Glossary-1.

[132] Eccles, 119. He writes: "Sound decision is the embodiment of command." He later discusses timeless factors of military decisions. He states that: "The following are the essential elements of a sound military decision: sound basic concepts, a clear sense of the objectives to be attained, a logical process of thought, knowledge of the pertinent facts, knowledge of the cause and effect relationships that exist in the problem under consideration, a set of pertinent quantitative planning factors, *an intuitive knowledge of military value* as it pertains to the problem, an appreciation of the human factors involved, and mental and moral character plus a sense of personal responsibility for the results of the decision" (emphasis mine), 265-266.

[133] TRADOC Pamphlet 525-70, *Battlefield Visualization Concept*, para.1-3. Its definition reads: "Battlefield visualization is the process whereby the commander develops a clear understanding of the current state with relation to the enemy and environment, envisions a desired end state which represents mission accomplishment, and then subsequently visualizes the sequence of activity that moves the commander's force from its current state to the end state . . ."

[134] Ibid., para. 4-3.

[135] Lieutenant General (Retired) L. D. Holder, USA. Interview with author, 31 July 1997, Fort Leavenworth, KS. Notes in possession of author. LTG Holder retired from active duty in August 1997, after serving in a "triple-hatted" billet as the Commanding General of the Combined Arms Center and Fort Leavenworth, the Deputy Commanding General of TRADOC for Training, and the Commandant of the Army's Command and General Staff College. He previously served as the commander of the 3rd Infantry Division in Wurzburg, Germany, and as commander of the 2nd Armored Cavalry Regiment during the Persian Gulf War.

[136] Ibid.

[137] J. F. C. Fuller, *Generalship: It's Diseases and Their Cure* (Harrisburg, PA: Military Service Publishing Co., 1936), 63.

[138] Originating in the mind or in mental or emotional conflict.

[139] David Langford, *War in 2080* (New York: William Morrow and Company, Inc., 1979), 11.

[140] See Ralph Peters' two articles, "Constant Conflict," *Parameters* (Summer 1997), and "The Future of Armored Warfare," *Parameters* (Autumn 1997).

[141] James G. Hunt and John D. Blair, eds., introduction to *Leadership on the Future Battlefield* (New York: Pergamon-Brassey's International Defense Publishers, 1985), 1.

[142] Gordon R. Sullivan and James M. Dubik, "Land Warfare in the 21st Century," *Military Review* 73, no. 9 (September 1993), 22.

[143] Ibid., 30.

[144] FM 100-5, final draft to revised edition, pp. 1-4 to 1-5.

[145] Ibid., pp. 3-1 to 3-2. See also TRADOC Pamphlet 525-5, *Force XXI Operations* (Fort Monroe, VA: GPO, August 1994), and "How to Fight Force XXI" White Paper—Decisive Operations (U. S. Army Command and General Staff College Concept Development Program: [http://www-cgsc.army.mil/cdd/papers/decisive.htm], undated).

[146] In an article entitled "Force XXI Battle Command" by LTG John E. Miller and MAJ Kurt Reitinger, *Military Review* 75, no. 4 (July/August 1995), 9, the authors assert that: "Although Force XXI battle command technology will change the way information is collected, delivered and presented, commanders will never have perfect knowledge of the operational situation surrounding them. More important, *command of soldiers will remain primarily a human endeavor. Consequently, intuitive skills will be called upon frequently to bridge the gap between what future battlefield systems information tells the commander and what the commander feels*" (emphasis mine).

[147] Paul T. Harig, "The Digital General: Reflections on Leadership in the Post-Information Age," *Parameters* 26, no. 3 (Autumn 1996), 133-134.

[148] Arsenio T. Gumahad II, "The Profession of Arms in the Information Age," *Joint Force Quarterly* (Spring 1997), 17. Gumahad is an Air Force officer assigned to the Office of Space and Technology at Headquarters, Department of the Air Force. Another baffling conclusion was reached by William Haythorn, Melvin Kimmel, and Alma Steinberg in their article "Senior Leaders on the Future Battlefield" in *Leadership on the Future Battlefield*, 61. They conclude that "The more rapid pace of events, greater dispersion, and greater lethality of the future battlefield seem likely to increase the need for senior-leader autonomy, [and] greatly increase the reliance on formal decision tools (such as computer-based-decision support systems)."

[149] Van Creveld, *Command in War*, 13. Concerning the effects of individual decisions on a war or a battle's course of events, Van Creveld writes that: "*The vast majority of them are in any case only made semi-consciously and as a matter of routine*. A good battalion commander does not have to 'decide' to post pickets at night any more than a reasonably competent corps commander has to 'decide' to take his maps along. Yet in the long run, and given a reasonable amount of luck, it is precisely this kind of thing that makes the difference between competence and incompetence, victory and defeat" (emphasis mine).

[150] Department of the Navy, Headquarters, United States Marine Corps, FMFM 1, *Warfighting* (Washington, D. C.: GPO, 1989), 68-69.

[151] Holder, interview with author.

[152] Ibid.

[153] Picart, 52.

[154] Harig, 138. He writes: "Ironically, systems that can scan a situation in great depth and analyze in great precision can provide a decision maker with so much capability that he becomes addicted to the information and consequently paralyzed by it . . . Through technology, it is not only possible to suffer paralysis by analysis, but also to neglect the intuitive skills that give commanders an important advantage in ambiguous situations."

[155] Robert Doughty, "The Art and Science of Tactics," *Parameters* 7, no. 3 (1977), 45. He also added that: ". . . 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", 39.

[156] FM 100-5, final draft to revised edition, p. 8-1. See also Richard D. Hooker, Jr., "21st Century Doctrine and The Future of Maneuver," *Land Warfare Paper no. 8.* (Arlington, VA: Association of the United States Army, The Institute of Land Warfare, October 1991), 1. He writes: "Today the United States Army is moving into an era where it must meet formidable strategic challenges with dramatically fewer resources. A smaller, leaner, professional Army can meet the challenge by embracing a warfighting doctrine which relies less on abundant resources and more on the intelligence, skill and courage of our superb soldiers and leaders."

[157] Bastick, 25.

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