Chapter Seventeen

NEOCORTICAL WARFARE? THE ACME OF SKILL*

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> *This is the key point: the effective employment of air and space power has to do not so much with airplanes and missiles and engineering as with thinking and attitude and imagination.*[1]
>
> —General Merrill A. McPeak, Chief of Staff, United States Air Force

If General McPeak is correct, and I believe he is, the opposite proposition should also be true. That is, if our country employs air and space power thoughtlessly or unimaginatively, this power will be less effective or even disastrously impotent. To help avoid such grave risks in the future, the thesis of this article takes us at least one stop beyond. McPeak's already powerful insight. This article argues that military power resides in the domain of the mind and the will; the provinces of choice, "thinking," valuing or "attitude," and insight or "imagination." Further, it argues that, because of this, military power can increase in effectiveness even as it decreases in violence. As a consequence, the article necessarily infers that air and space operations help establish the essential preconditions for meeting national security political objectives without force, or what I call *neocortical warfare.*

Some warnings: to me, "super" power is the capability that emerges from superior minds—the mental dimension and superior values,

*Richard Szafranski, "Neocortical Warfare? The Acme of Skill," *Military Review*, November 1994, pp. 41–55. U.S. Army Command and General Staff College. Used by permission.

the moral domain. As you will see, military power, like air and space power, also takes on a different meaning. Consequently, "employment" ultimately attaches more importance to communicating with other minds than to targeting objects. Even so, I do *not* argue that we should beat our swords into fiber-optic cables or satellites. Rather, I argue that we transform our sword into a viciously sharp stiletto and that we develop, refine and continually employ other, and ultimately more useful, weapons to influence adversary choices. Last, and most important, this is a work in progress. As such, the conclusions reached are both tentative and speculative, hopefully providing some signposts to un- or under- explored areas.

WHAT WE THINK WE KNOW

In their grand synthesis, *The Lessons of History*, Will and Ariel Durant assert that "the laws of biology are the fundamental lessons of history." They describe nations or states as biological organisms, human organisms, ourselves multiplied, our good and evil natures writ large.[2] Some states have the same flaws as humans—avarice, pugnacity, pride, the selfish desire for resources and mastery—and, like humans, compete and engage in misbehavior. Historically, war has been a necessity, the biological nation's way of eating, and a recurring form of misbehavior to the Durants.[3] Analogies suggesting that states are like biological organisms are convenient, simplistic and, of course, flawed. States or nations are organized groups of people. States do not act—compete, misbehave, conduct raids, execute air strikes, wage war—it is people within the group who sanction or compel these, or who act in the name of others. Hence, to Martin van Creveld, "War . . . is a social activity resting upon some kind of organization."[4]

Society is and segmented societies are the workplace of warfare, and social change is both a cause and outcome of human conflict. People are the essential element in all of this. John G. Stoessinger's study of seven wars concludes that the "human element," including "personalities and misperceptions," constitutes the final and critical link in the chain of events that culminates in war.[5] Just as there are "disorganized personalities" among individuals, there may also be, in a lay person's terms, crazy leaders and, because of them, crazy states. War, aggressive or defensive, occurs as a consequence of human

choice, of "conation," of will. Whether the people willing or choosing are sick or healthy, pugnacious or passive, war is a distinctly human activity.

Politics is also a human activity. "Politics" is the pursuit and exercise of power, and "power" is the ability to influence people who otherwise might not choose to be influenced.[6] To many, this ability to influence is seen as coercive, so much so that the "other means" Clausewitz describes as being added to the process of political dialogue in war are most often *violent* means. Consequently, among all the mammalian species on the planet, ours is the only one that engages in deliberate, intentional interspecific killing.[7] Today war is understood as violent conflict, an activity that resides at the high end of the spectrum of coercion. Warfare or war emerges when humans and human organizations choose to oppose their wills, to employ destructive means in an organized way. The object of war is, quite simply, to force or encourage the enemy to make what you assert is a better choice, or to choose what *you* desire the enemy to choose. Said another way, the object of war is to subdue the hostile will of the enemy. We cannot meet the immediate objective of war until or unless we subdue hostile will.

So far, we are on familiar ground. It is not difficult to understand "destructive means." They are the more or less brute force mechanisms and methods employed to imperil the life of biological organisms (individuals) and organic entities (states, nation-states, nations or groups of people) either directly or indirectly. We have no difficulty understanding that living organisms and organic entities are organized as systems. It also may be unremarkable to conclude that the methodical orchestration and application of destructive means against these systems are superior to disorderly or less orderly ones.[8]

It is, however, somewhat more difficult to realize that, if the object of war truly is *to subdue hostile will* or *to make the opponent comply with our will*, then we must consider enemies not just as systems, but as organisms with will. Likewise, if weapons are *means used to coerce an adversary's will*, then even our understanding of weapons must go beyond things, implements or tools. Yet, we have concentrated our attention on the *concrete* means and *material* ways used to subdue hostile will's *host*, rather than on the nature of will itself. We have been unimaginative. As a result, we have been approaching the

study of the art of war from a dangerously wrongheaded perspective. This is forgivable and, until recently, a flaw we could afford. It is also a flaw we can choose, or will, to correct.

It is pardonable because the notion of will is an abstruse one. Will is as difficult to understand as concepts of mind, consciousness, cognition and creativity. Ideas of psyche, spirit, transcendence and soul are even more contentious, more difficult to comprehend. Because we believe that the entity "will" is existential and brain-centered, we concentrate our attention on the existence of brains, not on the nature of will. In so doing we may have mistakenly identified the craft of war as the *art* of war. By that I mean that our science of war is not so much the study of subduing will as it is the study of devising and applying progressively more elaborate means and methods for destroying brains. Destroy enough brains, or the correct brains, our studies seem to encourage us, and "will" necessarily dies along with the organism. Thus, we meet the *real* object of war—subduing will—if we meet it at all, indirectly by the application of physical force.

At least three shortcomings to this approach are emerging. First, killing appliances and destruction machines are usually and necessarily expensive. The more ambitious the objectives of this apparatus, the greater the expense. Every penny spent to acquire the ability to destroy is a penny that cannot be spent to build. Second, in the absence of any clear and present threat to national survival that possession of such tools can reasonably be expected to counter, our citizens and their elected representatives have advocated other plans for our pennies. Last, the intellectual energy consumed by devising newer and better ways to kill and destroy distracts us from the real object of war: subduing hostile will. Lopping the limbs off an enemy's body, or even precisely excising muscles from it, undoubtedly sends a message to the enemy's brain. Might there not be other ways to communicate with hostile brains?

The architect of the 1929 "strategy of the indirect approach," B. H. Liddell Hart, advocated a more economical approach to meeting the aim of war. Yet, even he saw the "dislocation of the enemy's psychological and physical balance" only as "the vital prelude to a successful attempt" to overthrow the enemy. Psychological dislocation occurred when one gained a favorable "strategic situation," but even then, it took a "strategic operation" to meet the military aim. Hart

insisted that a strategic operation was not a "battle," but accepted that a battle might be necessary to achieve a decision.[9] If the object of war is to subdue hostile will, perhaps we would be wiser to approach the indirect approach more directly.

What if we viewed war not as the application of physical *force*, but as the quest for metaphysical *control*? What if we pursued the possibility that war might have as much or more to do with the idea of willpower and non-fighting than it does with the idea of physical power and fighting? Remember, it was Sun Tzu's assessment that "To subdue the enemy *without fighting* is the acme of skill." It follows, then, that *not* to subdue the enemy at all, or to subdue the enemy by fighting, would fall far short of the acme of skill. If, for example, Operation *Desert Storm* was a success, that is, it subdued hostile will, it is difficult to explain Saddam Hussein's continuing willful behavior. Viewed in this light, we did not even approach the acme of skill in the "last ancient war."[10]

We suspect that it might be valuable to pursue ways to subdue an enemy without fighting. It might bear fruit. After all, physical fighting is costly, with the winner and the loser both paying great expenses in blood and treasure. The hostile will attacked by physical means in one war often emerges later and with greater hostility in a new war. Moreover, the principal theorists or artists of warfare—Krishna of the *Bhagavad-Gita*, Sun Tzu, the Khan, Machiavelli, Lenin, Liddell Hart, Mao, John Boyd—and many of the masters of the craft of war—Napoleon, Clausewitz, Guderian, Patton, Slim, Magsaysay, John Warden—emphasize the importance of the moral, the mental and the will in conflicts.[11] So important are these cerebral, metaphysical things that Eliot A. Cohen and John Gooch hint that much military failure might have its genesis in the "psychological cripples" that rise to general and flag rank in the military hierarchy.[12]

To continue our inquiry we must accept that will *is* existential and brain-centered, and enter the human brain.

According to Paul McLean, the human brain is actually three brains in one, a "triune" brain. Each brain is specialized in function and interconnected with the other brains. The *reptilian* brain comprises the brain stem, the midbrain and the basal ganglia. It controls the

reticular activating system, breathing and heart rate. With only the reptilian brain, we would be cold-blooded reptiles.[13] The *limbic* brain surrounds the reptilian one. The limbic is a paleomammalian, or early mammal brain. According to Robert Ornstein and Richard F. Thompson, it is the source and regulator of the basic mammalian survival activities: feeding, fighting, fleeing and sexual reproduction. Ned Hermann describes its contributions as controlling the autonomic nervous system and its involuntary responses. The limbic registers rewards, punishments and emotions. It maintains a hierarchy of dominance and submission within the species and between the organism and the environment. The limbic drives sexual courtship, "follow-the-leader" rituals and mass migrations. The limbic also conditions behaviors such as ganging up on the weak and the new, defending territory, hunting, bonding, nesting, greeting, flocking and playing.[14] With only the limbic and its embedded reptilian brain, we would be warm-blooded mammals.

The capstone of the brain, as we know it today, is the *neocortex* or neo-mammalian brain. The neocortex comprises 80 percent of total brain matter. It enables us to think, organize, remember, perceive, speak, choose, create, imagine and cope with or adapt to novelty. Within the neocortex 180 billion neurons or nerve cells interact without any physical connection. The possibilities for interconnections between neurons in one human brain are "greater than the number of atoms in the universe," according to Ornstein.[15]

The triune brain also appears to have specialized hemispheres. The left hemisphere of the neocortex or the left brain, is the site of cognition. It processes words and numbers and organizes data in logical and linear sequences. Unlike the left brain, the right brain is more adept at registering the images, patterns, sounds and movement discernible in phenomenological perceptions or sensory input. Using holistic processing, the right hemisphere of the brain conceptualizes, hypothesizes and maintains an intuitive sense of the whole.[16] Because Western oral and written language and scientific notation are linear and sequential, the left brain dominates these activities. Because creation is the product of illumination or insight, pattern recognition and new or hypothetical conceptual constructs, its source may be the right brain.

If F.S.C. Northrop is correct in *The Meeting of East and West*, "culture" conditions some of the operations of the left brain. Specifically, atmospheric and linear perspective in classical Western art and the syntax of Romance languages both work together to channel cognition in ways that are different from the ways that the "undifferentiated aesthetic continuum" of Eastern art and the "syntax" of the Asian word-picture or ideogram condition the thinking of those in the East.[17] There is no "foreground, background or vanishing point" in Eastern art. There are no longer any pictographs in the Western alphabet. (Although the iconography of comic books and animated cartoons and the pixels of video are beginning to replace writing in our country. Someday these may constitute the new pictographs of an increasingly less literate United States.)

Some of these cultural variations in cognition and elucidation are clear when one compares the German version or an English translation of *On War* with any one of the many English translations of *The Art of War, the Canon Law* of Roman Catholicism with the "doctrines" of *The Tae Te Ching*, or the negative space in a Japanese watercolor with the meaning-filled space in Da Vinci's "Last Supper." These differences merely are interesting at first glance, but upon reflection, understanding them is important to meeting the aim of subduing hostile will without fighting.

None of this should suggest that the left brain is inferior to the right brain. Nor does it pretend to understand either how the brain functions or how or when "mind" or "will" emerged from the brain structure. Each brain and then the triune brain probably evolved, or were naturally selected, in response to some massive, catastrophic environmental change or "bifurcation point," in Ilya Prigogine's terms.[18] Perhaps the limbic evolved in response to a climatic change. The neo-mammalian might have evolved in response to competition for survival with other species.

The neocortical brain, unlike the other two brains, affords the opportunity to adapt in ways that sustain what might appear to be *un*natural selection to some—the creativity that generates genetic engineering, artificial hearts and joints, organ transplants, and so forth. Indeed, the very highly developed neocortex, the brain that elegantly integrates both neocortical hemispheres, may even exercise some control over the sympathetic and parasympathetic responses of the

central nervous system.[19] Because of the interconnections (the *corpus callosum*, the *Hippocampal commissure*, the *anterior commissure*) among all three brains and both hemispheres, the human brain structure truly makes us "the paragon of animals" on this planet.

Does it? Recall that ours is the only mammalian species that organizes for warfare and intentionally kills its own members. Do we do this because the reptilian brain forces us to kill for biological survival?

Do we kill because the limbic compels us to play, to hunt, to learn whether ours is the role of domination or submission? Perhaps we kill because our neocortex calculates that killing accrues some logical or hypothetical advantage. We kill, according to Desmond Morris, because we have artificial material weapons more potent than "tooth and nail." According to him, we developed physical weapons "primarily as a means of defense against other species and for the killing of prey."[20]

Once we had weapons, they were readily available for uses beyond defense against other species and hunting for food. Among these other uses, weapons provide a means to express anger or serious displeasure, to coerce, to make some risks and consequences mortal. We chose, for whatever reason, to invent weapons. We *choose* to use weapons and engage in warfare. One reason is because battles and warfighting are satisfying in a paleomammalian and a neo-mammalian way. They provide what John Keegan calls "moral consolations," including "the thrill of comradeship, the excitements of the chase, the exhilarations of surprise, deception and the *ruse de guerre*, the exaltations of success, the sheer fun of prankish irresponsibility.[21] Some of these are limbic stuff; bonding, ganging up and all the chemical or hormonal effects of the massive activation of the sympathetic nervous system that occur in response to anger and fear. Others—the exhilaration of surprise and the fun of violating norms—are more neocortical. It is "war alone," writes Martin van Creveld, "that both permits and demands the commitment of *all* man's [*sic*] faculties, the highest as well as the lowest."[22]

Passion alone can sustain war, but logic alone cannot stop fighting. Little is simple for the paragon. Our left brain science, for example, is dependent on the illogic, or perhaps different logic, of the right brain.

Things essential to science cannot be proven by science: the principle of causality, theories founded on the logical error of affirming the consequent, acceptance of the principle of limited variability and the unverifiable principle of verifiability, for example.[23] That "deterrence theory," firmly grounded in the *post hoc* fallacy, survived and eventually confounded the now defunct Soviet experiment shows the value of coupling imagination, illogic and logic.

The complex interactions among brains, hemispheres and environments continue. In teaching us what we cannot know or predict, Heisenberg's uncertainty principle, Godel's proof, the Einstein-Podolsky-Rosen effect, Bell's theorem, Aspect's experiment and the recent exploratory sorties into the world of chaos and nonlinearity illuminate some of the capability of the aroused neocortex.[24] Alan Beyerchen's reframing and rendering of *On War* in defense of Clausewitz in "Clausewitz, Nonlinearity, and the Unpredictability of War" takes what appears to be a new reality—nonlinearity—and applies it to an old paradox: war.[25] Likewise, Alvin and Heidi Toffler's *Third Wave* and John Arquilla and David Ronfeldt's discussion of netwar and cyberwar are excellent works that suggest fertile new directions in war and "anti-war."[26] Many of the bits and pieces suggestive of a theory of neocortical warfare seem to be falling in place.

WHAT MAY FOLLOW FROM WHAT WE THINK WE KNOW

The triune brain suggests an analogy. Might there not also be three approaches to warfare? The reptilian approach is animalistic fighting. The socially organized paleomammalian approach relies on hunting and on ganging up to make the kill. The neo-mammalian approach requires greater organization, integration and the conceptualization of time and space. It relies on calculations, logic and sequential thinking to make the kill. This third approach also allows more discriminating application of brute force.

Even so, the neo-mammalian approach also may have within it left or right hemisphere-dominant approaches. Campaign planning, with its current emphasis on the linear processes of a system (like the military's current application of "total quality management"), predominantly is a left hemisphere-dominant approach. In this scheme, the enemy is a system, an assemblage of production nodes

controlled by an organic brain. The campaign applies physical force to these nodes, as targets, using a presumed calculus that assesses effects on the whole system. A right brain-dominant approach, on the other hand, might suggest reframing conflict as warfare against minds and envisioning weapons as any means used to change the enemy's will.

As the right and left brains interact, the enemy is not seen as an inorganic system with multiple centers of gravity, but as other neocortical organisms. Neocortical warfare is warfare that strives to *control* or *shape* the behavior of enemy organisms, but without destroying the organisms. It does this by *influencing*, even to the point of regulating, the consciousness, perceptions and will of the adversary's leadership: the enemy's neocortical system. In simple ways, neocortical warfare attempts to penetrate adversaries' recurring and simultaneous cycles of "observation, orientation, decision and action."[27]

In complex ways, it strives to present the adversary's leaders—its collective brain—with perceptions, sensory and cognitive data designed to result in a narrow and controlled (or an overwhelmingly large and disorienting) range of calculations and evaluations. The product of these evaluations and calculations are adversary choices that correspond to our desired choices and the outcomes we desire. Influencing leaders to not fight is paramount. Warfare is "organized" fighting. It becomes less organized, more nonlinear, more chaotic and unpredictable once it begins. Until battle (physical fighting) begins, the leaders can stop it more easily. In very complex ways, the neocortical approach to warfare influences the adversary leaders' perceptions of patterns and images, and shapes insights, imaginings and nightmares. This is all brought about without physical violence. It is all designed to reorganize and redefine phenomenological designators to lead the enemy to choose not to fight. In neocortical warfare, enemy minds are the *Schwerpunkt* and armed military capability the *Nebenpunkte* (a term coined by John Boyd to mean "anything that is not the *Schwerpunkt*").

That nonfighting is the attribute and aim of neocortical warfare does not mean that this warfare is passive or inactive. It requires considerable effort, resources and skill—the acme of skill—to subdue an enemy without fighting. The aim is not merely to avoid battles. The

aim is to *cause the enemy to choose not to fight by exercising reflexive influence*, almost parasympathetic control, over products of the adversary's neocortex. In actively enjoining the minds of adversaries to not fight, we must understand the adversary's culture, world view and the representational systems the adversary recognizes, values and uses to communicate intent. We must understand the adversary's verbal and nonverbal language. We might use tools similar to Richard Bandler and John Grinder's "neuro linguistic programming" to understand how the adversary receives, processes and organizes auditory, visual and kinesthetic perceptions.[28]

Knowing what the adversary values and using the adversary's own representational systems allows us to correlate values, to communicate with the minds of enemies in the verbal and nonverbal language of the enemy. The objective is to shape the enemy's impressions as well as the enemy's initiatives and responses, pacing the enemy through the cycle of observation, orientation, decision and action. We attain the acme of skill when we meet our objectives and the adversary chooses the nonfighting alternative voluntarily, even unaware that our decisions and our behavior led to the reframing and the redecision reached.

THE ACME OF SKILL: REINVENTING WARFARE AND WEAPONS

The single most important change that has occurred on the planet since the advent of the neocortex is crowding and overpopulation.[29] Birth control and abortion are seen by some as a biological necessity even though constituting "aggression against zygotes."[30] These measures have delayed the gloomy predictions of The Club of Rome and Donella H. and Dennis L. Meadows in *The Limits to Growth*.[31] Nonetheless, population doubling times, depletion or appropriation of the net primary product (using vegetable mass), the scarcity of nonrenewable resources and the restraints on individual freedom that lack of space and food may ultimately impose are all working together to make this *potentially* a small, dangerous planet. The collapse of the nation-state, the return to tribalism, a new Dark Age of fundamentalism or the "clash of civilizations" all loom as possibilities.[32] Even so, the global instability caused by the collapse of the Soviet empire, the proliferation of nuclear weapons and ballis-

tic missile technologies, the rise in self-determination, or the cross-currents of persistent "waves" may pose less of a danger than our own lack of intellectual agility, our own lack of imagination, myopic vision and bad choices.

The co-evolving, co-dependent organisms on the planet, and its present nations, nation-states and groups, need to choose success strategies or failure strategies to manage conflict. In our own country, we may have reached the point where failure strategies include such concepts as armed forces sized to fight two wars, two "major regional contingencies," nearly simultaneously.[33] Whether we imagine they are "win, hold, win" or "win, win" wars, regional wars can be nothing but "lose, lose." As an alternative to unimaginatively planning to fail, perhaps we could put our imaginations and our entire neocortex to better use by pursuing neocortical warfare.

We already have awareness of neocortical warfare and some skill in waging neocortical warfare against adversaries and friends alike. Politicians necessarily are experts in this type of warfare. Hitler started one over six decades ago. Eric Voegelin observed in 1939 that, lacking "a profound and intimate knowledge of German cultural history and of the history of the German language in the last two centuries," non-Germans failed to appreciate the significance of Hitler's call for "neo-pagan" Germanic *Lebensraum*. As a consequence, non-Germans were effectively "screened" from Hitler's real expansionist motives.[34] The *Blitz* itself used nightmare and terror to achieve its general effect even while relying on arms to attain its more specific aims.

In our own country, President John F. Kennedy's decision to ignore the more hateful of Khruschev's two letters during the crisis over Soviet missiles in Cuba, for example, was critical in reframing the adversary's perceptions. Likewise, our country's large military budgets were once the product of *hypotheses* of threats and dangers, *images* of falling dominoes, *visions* of iron curtains and space shields, *theories* of nuclear deterrence, *metaphors* of escalation ladders and *nightmares* of an evil empire. Smaller budgets and smaller military forces follow in the wake of a *hypothetical* new world order, *theories* of defense conversion and *visions* of nuclear winter. These observations are small tests. What would it take to move us closer to a theory?

Analyze past and present conflicts of all kinds and in all arenas—politics, warfare, business, sports, and so forth. Look for apparently anomalous events where small, willful, fluid, fast-responding or mentally powerful forces overcame larger or more physically powerful ones. Scrutinize cases where physical attacks were unable to subdue will, such as at Stalingrad, Britain's "finest hour," Dresden, Vietnam, Afghanistan, the *intifadah*. Examine cases where nonviolence, mental attacks, nightmares, illusions, character assassinations or smear campaigns subdued hostile will, brought the mighty low or rendered the powerful impotent. Whenever the weak overcomes the strong using the power of mind or will, evidence of neocortical warfare exists.

We might then look forward and hypothesize that neocortical warfare has four characteristics. First, it recognizes that competition, conflict and conflict resolutions are permanent features of the human condition. The target of all human conflict, the battleground of all conflict resolution, is the human mind. In reframing all conflict as one form of warfare or another, neocortical warfare rejects the notion that warfare is an aberration. It accepts that conflict will never end and that we must invest resources to win its endless engagements. The Cold War may be over, but *cold* war must be the goal. Hence, military forces must envision themselves not just as "armed forces," but as elements of larger "national security forces" in neocortical warfare. Security, much to our chagrin, does not emerge from arms, but arms arise from insecurity. Conceptions of security or insecurity exist in the mind.

Second, a theory would accept that adversaries will wage—are waging even as you read this—neocortical warfare against us. (That China is quiet, for example, may not mean that we are not engaged in a conflict with China.) Neocortical warfare uses language, images and information to assault the mind, hurt morale and change the will. It is prosecuted against our weaknesses or uses our strengths to weaken us in unexpected and imaginative ways. That being the case, we have less room for the unimaginative, the mentally weak, or whatever Cohen and Gooch mean by the psychologically crippled among our leaders. Leaders are critical nodes, the targets of neocortical warfare, and they must be prepared for the adversary's assaults.

Third, we should devote the weight of effort and more resources to the deliberate and continual pursuit of nonviolent influence over the adversary. The object is to understand the enemy well enough to condition or determine the choices the adversary makes. Using the adversary's lexicon, syntax and representational systems allows the neocortical warrior to lead the adversary through the cycle of observation, orientation, decision and action. Mastery is the result.

Fourth, lean, fast-reacting, violent, almost "limbic" forces—the stiletto held in readiness to coerce with force of arms—must be created or preserved to support neocortical warfare. In some cases we may have to introduce shock, surprise and terror in the adversary's external world, through what Arquilla and Ronfeldt call "the exemplary use of our military capabilities," to fuel the nightmares and disorientation sought in the enemy's internal world.[35] We should not and cannot foreclose on the possibility that small, tremendously violent demonstrations will be necessary in the future. Even so, we also should expect that evolving constraints will cause us to characterize all future lethal military operations as "special operations" and that the principal object of these operations will be "psychological warfare."

As a consequence, all armed military forces must be or become elite forces. "Elite" means people and forces selected, organized, trained and equipped to rapidly adapt to, and even shape, changing or unforeseen circumstances. Although armed forces must operate in all media, air and space forces will occupy a critical position in the future national security force. Air and space provide speed, the medium and the means of almost instantaneously communicating images and language, the reach to quickly span the globe.

How would we "operationalize" neocortical warfare? What are the national security force structure implications? What do we need to transform the abstract into the concrete? First, acquisition of the most robust, most comprehensive intelligence-gathering and information-disseminating apparatus in the world is essential. In neocortical warfare, *understanding* is power. This apparatus would be a better integrated intelligence and information agency or a network of agencies. It would combine the best capabilities and analysts of the Central Intelligence Agency, the National Security Agency and the Defense Intelligence Agency at a level below the senior interagency

group. This new network would work in partnership with our foreign service, private sector field activities and deployed training and educational entities. It is an urgent requirement to resist any attempt to reduce our global collection and analysis capability. If we are to subdue enemies without fighting, we need more field agents, more intelligence-collection capabilities and systems to support the work of intelligence analysts.

We cannot hope to influence or condition what we do not understand. What are the values of the Serbs or the Iraqis? How do the Hmong or the Kurds organize sensory data? What are the differences in the way Albanians or Macedonians approach negotiations? What is the Achilles' heel of a nation or non-state organized and operated like a business corporation? Inevitably, greater reliance on information systems equates to greater reliance on the use of space. Space systems provide a panoramic "view" of the earth across the electromagnetic spectrum. The technological exploitation of space can allow us to see, hear and sense the adversary, to recognize patterns and changes, to ask the right questions, to send the right messages quickly.

We must exploit the medium of space. Vice Admiral Jerry O. Tuttle's space and electronic warfare *Sonata* envisions one architecture that might begin to prepare us to fight prolonged neocortical warfare.[36] Other architectures aimed at providing national security in a broader sense will follow. Even so, we must appreciate that we cannot hope to control what we cannot see, hear or understand. (*Ninjitsu*, the art of invisibility, may be the best countermeasure to an adversary's space or intelligence capabilities.)

Second, neocortical warfare requires a better integrated, joint civilian and military national security control force with both armed and unarmed elements. It must be capable of sustained, cooperative and non-lethal presence in every area we have interests. Elements of it must also be capable of prompt, noncooperative and violent combined arms intervention in denied or hostile areas *vital* to our interests. The lethal elements of this force, although small by today's standards, must be morally, mentally and technologically superior to the elite guards that surround the leaders of the groups of the world. Space-based capabilities could provide these forces with information and vision. Air forces, as a category of force and not necessarily as a

military department-specific force, provide the reach and a large share of the "touch" necessary for this armed portion of the force.

The non-lethal elements of our national security force deploy democratic values and behaviors within the context of local cultures; cultivate networks, markets and partnerships; teach basic skills; and penetrate the perceptions of the target country. The lethal elements would be organized as multifunctional or cross-functional teams or networks. These teams would understand the target country as a system of subsystems; know precisely when, where and how to intervene for maximum effect, and could execute overt or covert violent operations. This force will understand that, in the lexicon of the "quality" movement, the enemy is the "customer" and the enemy's segmented society is the "workplace" of neocortical warfare. Since adversaries may abound, global reach will be an important requirement in the world that is emerging.

Yet, in the future, "access" and "presence" are more likely to be the invitation to brandish our values and share our culture, than brandish our weapons and share our antiquated vision of military superpower. A revitalized and revised version of the Peace Corps and a reframing of the vision of the Army's Special Forces are required. Those who resist the assignment of nonmilitary or nonlethal missions to the uniformed men and women who serve our country should thoughtfully reconsider our country's full range of national security needs in the future.

Third, and finally, those lethal forces we possess should be small. The active, standing component should be inadequate for any great mischief not supported by our Congress and the citizens it represents. If our Congress wants us to sortie out in large numbers to "win, win" or to "win, hold, win," then our Congress must consider the wisdom of appropriating the money to raise and support such an army. Today we may be too closely wed to military hierarchies (instead of networks) and a nation of command and control (instead of guidance and monitoring in accordance with the *Abseits*) that may disencentivize authentic empowerment.[37] In the worst case, these command and control hierarchies may be sizing and shaping our huge forces as an unintended enticement to fail, making us unintentionally vulnerable to those who might lure us inadvertently into

fighting the limbic warfare that willingness to become expert in neocortical warfare might avoid.

We should consider the possibility that today our Armed Forces may be less "armed" than they are fat with unarmed housekeepers: the administrators of contracts, records, regulations and red tape, those devoted to the maintenance of our camps, bases, factories, warehouses and hospitals. Fat can restrict the blood going to the neocortex, impede thinking and blur vision. Disorientation and confusion often result. Disorientation could lead to clinging to the past in the vain hope that size alone will allow the imposition of the past's structures on the present and the future.

In the view of the electorate, the idea of "forts" inside the United States, for example, perhaps is now as antiquated as the notions of "commissaries" and "military family housing." The dangers of the frontier no longer pose a threat to the homesteaders in Kansas, Nebraska and Wyoming. Grocery stores and dwellings for military members abound in all but the most remote areas of our country.[38]

Confusion could cause us to vindicate our gross size by seeing or expecting threats and dangers as the stimuli demanding our response. There are threats and dangers, but they reside more in hostile will than in hostile means. Means are impotent without the will to employ them to some purpose. If we are disoriented and confused, what we may fail to see is the reality of a reflexive world wherein *we* might be the very stimulus that causes the response we subsequently categorize as threat or danger. In any case, whatever forces emerge in the future, in this country or elsewhere, should not be dependent on nuclear arms. It will be increasingly difficult for our country to assert the danger of weapons of mass destruction while possessing, as we do today, great numbers of them. Would it not also be increasingly difficult for other countries to pursue or preserve theirs after we and our true friends have set most of ours aside?

The American people who sustain America's national security forces want security in return for the investment of their children and their taxes. At the acme of skill, this security arises not from subduing enemies by fighting but subduing them without fighting. Yet, sadly, we do not appear to be pursuing the acme of skill. Physics and medicine race ahead. "Quantum connectedness" theorizes that matter and

energy may be organized by instantaneous connectedness or faster-than-light communications.[39] Medicine learns that the brain intervenes to regulate the health of the body, bolster the immune system, produce endorphins to fight pain or enhance performance.[40]

Yet, the craft of war lags behind. Are we satisfied only to sift through these discoveries looking for novel, more efficient weapons and ways to kill and destroy? We choose to think and act this way, artless and unimaginative as it is. We might choose to overcome the limitations of today's weapons. Range and speed limited weapons in the past. Today space allows us to overcome the limitation of range, and cyberwar, electronic warfare and radio-electronic combat begin to change our understanding of weapons. The immediate challenge in physical weaponry, we think, is to operate at the speed of light. Yet, we already have some weapons that operate at the speed of light: images and information carried by fiber optics; the weapon of military *kanban* in the information age.[41] Warfare can evolve beyond the limitations imposed by physical weapons aimed at destruction and death.[42] Neocortical warfare could be the result.

The poet-philosopher T. E. Hulme observed at the last *fin de siècle* that the end of one *Weltanschauung* and the beginning of another always seems to spawn "the unsystematic philosopher."[43] The celebration of a new millennium and a New Age has already begun for some. We suspect or even know that the future will transform our understanding of values, conflict, warfare and technology. Neocortical warfare—subduing adversaries without violence—is not only the Warfare of the future, it is also the most demanding kind of warfare. It calls for the most imaginative and effective employment schemes. The soft *can* overcome the hard, as both Eastern wisdom and history tell us. A theory of neocortical warfare is out there somewhere, waiting for a more systematic philosopher to seize it. Perhaps that philosopher will read this.

NOTES

[1]General Merrill A. McPeak. "Flexibility and Airpower," an address presented at the Air Mobility Command Dining In. 12 June 1993, in U.S. Department of the Air Force, *Air Force Update* (June 1993), 6. Emphasis added.

[2]Will and Ariel Durant. *The Lessons of History* (New York: Simon and Schuster. 1968), 19.

[3]Ibid., 81–86.

[4]Martin van Creveld. *The Transformation of War* (New York: *The Free Press*, 1991), 157. Van Creveld had the bad luck of having this book appear at the same time the war against Iraq began. Chapters 6 and 7 of this under-appreciated book are magnificent.

[5]John G. Stoessinger. *Why Nations Go to War* (New York: St. Martin's Press, 1985), 204–19.

[6]Lee G. Boman and Terrence E. Deal, *Reframing Organizations: Artistry, Choice, and Leadership* (San Francisco: Jossey-Bass Publishers, 1991), 225–29, 237–40, and Robert L. Morlan, *American Government: Policy and Process* (Boston: Houghton Mifflin Company, 1971), 2–3.

[7]Robert L. O'Connell, *Of Arms and Men: A History of War, Weapons, and Aggression* (New York: Oxford University Press, 1989), 14–17.

[8]John A. Warden III, *The Air Campaign: Planning for Combat* (Washington DC: National Defense University Press, 1988). The challenges future campaign planners face are (1) to contrive plans that attack or engage living organisms and not just systems, and (2) to comprehend the impotence of dreadnoughts against "zodiac-boats." The "non-trinitarian" wars (van Creveld's descriptive term for those conflicts that do not evidence Clausewitz's "remarkable trinity" of state, people and armed forces) or "Third Wave" wars of the future are radically different from the wars of the recent past. It may prove to be much easier to plan another violent campaign against Iraq, for example, than it is to plan one against the armed forces of a nonstate.

[9]B. H. Liddell Hart, *Strategy*, 2d ed., rev. (London: Faber & Faber, Ltd., Signet Books, 1974), x, 325–30.

[10]McPeak, "*Flexibility and Airpower.*" 3. General McPeak does not assert that Desert Storm was the "last ancient war." He merely wonders whether it might have been or not. The "acme," in the opinion of some, would have been to prevent Saddam's aggression in the first place.

[11]John R. Boyd, "A Discourse on Winning and Losing." August 1987. Boyd's analysis of strategy, tactics and the operational art led him to the discovery of the now famous "OCDA loop." The loop—the cycle of observation, orientation, decision and action—led him to additional discoveries. One of the most important of these is the criticality of time in competition or conflict. Another, and equally important, analysis within the "discourse" is the nature of the fighting done by pirates, brigands, guerrilas and the essence of the counterguerrila campaign.

[12]Eliot A. Cohen and John Gooch, *Military Misfortunes: The Anatomy of Failure in War* (New York: The Free Press, 1990), 8.

[13]Paul McLean discussed by Ned Hermann, *The Creative Brain* (Lake Lure, NC: Brain Books, 1988), 31.

[14]Robert Ornstein and Richard F. Thompson, *The Amazing Brain* (Boston: Houghton Mifflin Company, 1984), 21–40, 133–71.

[15]Hermann, *Creative Brain*, 32–39 and Ornstein and Thompson, *Amazing Brain*, 24–29, 38–39.

[16]Robert E. Ornstein, *The Psychology of Consciousness*, 2d ed. (New York: Harcourt Brace Jovanovich, Inc., 1977), 20–39. See also Norman Geschwind, "Speciaizations of the Human Brain," in Rodolfo R. Linas, *The Workings of the Brain: Development, Memory, and Perception* (New York: W.H. Freeman and Company, 1990), 105–20.

[17]F.S.C. Northrop, *The Meeting of East and West* (New York: The Macmillan Company, 1946), 407.

[18]Ilya Prigogineand Isabelle Stengers, *Order Out of Chaos: Man's New Dialogue with Nature* (Boulder: New Science Library, 1984), 171–76, 297–313.

[19]Richard M. Restak. *The Mind* (New York: Bantam Books, 1988), 173–85.

[20]Desmond Morris, *The Naked Ape: A Zoologist's Study of the Human Animal* (New York: McGraw-Hill Book Company, 1967), 173–85.

[21]John Keegan, *The Illustrated Face of Battle: A Study of Agricourt, Waterloo and the Somme* (New York: Viking Penguin, Inc., 1989), 285.

[22]Van Creveld, *The Transformation of War*, 226. Let me explain the "sic." Conflict between humans may be natural, but mortal combat with weapons is not. It may be learned behavior. Some valuable martial behaviors are learned on the "playing fields" of games.

[23]Arthur Pap, "Does Science Have Metaphysical Presuppositions?" *Readings in the Philosophy of Science*, editors Herbert Feigi and Mary Brodbeck (New York: Appleton-Century-Croft, Inc., 1953), 21–53.

[24]Gary Zukav, *The Dancing Wu Li Masters: An Overview of the New Physics* (New York: William Morrow & Co., Inc., 1979; Bantam Books, 1980).

[25]Alan Beyerchen, "Clausewitz, Nonlinearity, and the Unpredictability of War," *International Security* (Winter 1992–1993), 59–90.

[26]Alvin and Heidi Toffler, *War and Anti-War: Survival at the Dawn of the Twenty-first Century* (Boston: Little, Brown and Company, 1993). Also, see John Arquilla and David Ronfeldt, "Cyberwar is Coming!" *Comparative Strategy* (April–June 1993), 141–65. Cyberwar is here. Even so, I believe there are differences between theories of cyberwar and neocortical warfare. Neocortical warfare considers conflicts involving national security as warfare, thereby eradicating the gray area between peace and war and the distinctions that could separate today's armed forces from tomorrow's national security forces. It views subduing hostile will, or control over the adversary, as the aim of conflict, including warfare. Like cyberwar, neocortical warfare suggests that there are and always have been nonviolent or less violent ways to establish control. Neocortical warfare asserts that controlling or subduing an adversary *without* fighting—because of its many advantages—ought to be the goal. In sum, cyberwar and cyberwar techniques such as propaganda, deception, illusion and concealment may be viewed as specific applications of the principles of neocortical warfare.

[27]Boyd, "A Discourse on Winning and Losing," suggests that the way to win is to operate (that is, to observe, get oriented, decide and act) more quickly than an adversary. Ways to do this include depriving the adversary of essential information, overloading the adversary with puzzling or difficult to interpret information, using the adversary's "genetic heritage" or "cultural tradition" so that the enemy is self-disconcerted or self-deceived, frustrating adversary actions, or denying the enemy feedback, or accurate feedback on the consequences of action taken. All of this is designed to "generate uncertainty, confusion, disorder, panic, chaos . . ." and shatter cohesion, produce paralysis, and bring about collapse." Because the real province of conflict is the mind, all warfare is neocortical warfare.

[28]Richard Bandler and John Grinder, F*rogs to Princes: Neuro Linguistic Programming* (Moab, Utah: Real People Press, 1979).

[29]Dr. Armin Ludwig, "Economic Growth and Resource Competition as Threats to World Stability," a lecture presented at the Air War College, 15 September 1993. Using World Bank data, Professor Ludwig forecasts that by 2020 the world population will be 8.7 billion (today it is 5.5 billion) and the world gross domestic product will be $58.5 trillion (today it is about $25 trillion). As threats to stability, population is the "weak force" and resource consumption is the "strong force." He concluded his lecture by suggesting that by 2020, "International resource conflicts will be endemic." Used with Dr. Ludwig's permission.

[30]Morris, *The Naked Ape*, 178.

[31]Donella H. and Dennis L. Meadows, *Limits to Growth: A Report for the Club of Rome's Project on the Predicament of Mankind*, 2d ed. (New York: Universe Books, Signet Books, 1974).

[32]Samuel P. Huntington, "The Clash of Civilizations?" *Foreign Affairs* (Summer 1993), 22–49. See also "Responses to Samuel P. Huntington's 'The Clash of Civilizations?'" *Foreign Affairs* (September/October 1993), 2–26.

[33]US Department of Defense. *The Bottom-Up Review: Forces for a New Era*, by Les Aspin (1 September 1993). The review postulates the need to preserve large conventional forces at least until 2000 in order to engage in two major regional contingencies "nearly simultaneously." If one accepts van Creveld's thesis, the bulk of these forces will have little military utility. If the essence of conflict resides in the "mind," then the principal purposes of such forces are as insurance against the failure of our own willpower or minds. One interpretation might be that, unwilling to shape events by a commitment to subduing enemies without fighting, we instead hope to fight them in familiar ways. See also John T. Correll, "Two at a Time," *Air Force Magazine* (September 1993), and Michael R. Gordon, "Military Plan Would Cut Forces But Have Them Ready for 2 Wars," *New York Times* (September 1993), 1.

[34]Eric Voegelin, "Extended Strategy: A New Technique for Dynamic Relations," *Journal of Politics* (1940), 189–200. Few non-Germans appreciated Hitler's *Lebensraum* as the "biopolitical" manifestation of the racist views he derived from the pseudoscience of Ernst Haeckel. This linkage is defined and explored in George J. Stein, "Biological Science and the Roots of Nazism," *American Scientist* (January–February 1988), 50–58. Stein also shows that *Mein Kampf*, in specifying the German need for *Lebensraum*, clearly forecast war in Europe as Hitler's preferred solution.

[35]Arquilla and Ronfeldt, "Cyberwar is Coming!" 160. In the future "exemplary use" will not be just selecting objects with high value—added as targets for attack or the application of physical force. More important, it will be the selection of the enemy mind—or the enemies minds—as the centers of gravity of hostile will.

[36]US Department of the Navy. *Sonata*, by Vice Admiral Jerry O. Tuttle, 1993, 1. In the "Prelude," Tuttle proclaims the arrival of a "new kind of warfare, which we call Space and Electronic Warfare."

[37]The "quality movement" can improve our ability to fight. For this to occur, we must find ways to make empowerment work within a military architecture. Leaders in the military today declare their commitment to empowerment, but many seem uncomfortable contemplating nonhierarchical organizational structures or the ways of operating that empowerment requires. In the opinion of some, such things as traditional scalar "wiring diagrams," senior officer reserved parking spaces in front of stores like the post exchange and commissary and a tendency to measure the same old

things masked in the new lexicon of quality show the difficulty of making cultural changes. Authentic empowerment requires that we adopt different views and learn different behaviors. The result, however, could be the creation of national security forces so empowered that each individual is a cooperative center of gravity, a production unit of incredible influence, force, or lethality. Such a force would be difficult to subdue.

[38]US Congress of the United States, Congressional Budget Office (CBO), *Military Family Housing in the United States*, a CBO study (September 1993). According to the "summary" accompanying the report, the CBO calculates savings of as much as $4.6 billion between 1994 and 1999 by providing less DOD housing and "relying more on cash housing allowances" that military families can use to obtain housing in the private sector. With the Census Bureau reporting that over 36 million Americans live in poverty and the electorate wanting a national health plan, like it or not, I expect our approach to military family housing will change to create more of a "peace dividend." Those changes will necessitate an evolution in our vision of bases, forts, posts and camps.

[39]Zukav. *The Dancing Wu Li Masters: An Overview of the New Physics*, 301–2. There are many physicists who believe that the quest for quantum connectedness is as chimencal as the quest for a united field theory.

[40]US Army Research Institute for the Behavioral and Social Sciences. "Training Lessons Learned from Peak Performance Episodes," Technical Report 711, by J.L. Fobes, June 1986. This Army manuscript advocates teaching soldiers the "self-regulation of endorphin levels" or using competitive sports training "for endurance management (controlling fatigue and pain for sustained performance)." Imagine an elite force of troops, trained to be, among other things, endorphin (endogenous morphine and other opiates) self-regulators. Imagine these elite troops donning their chemical defense gear to protect themselves from adversary neocortical warriors—the limbic force—armed with naloxone, an endorphin inhibitor.

[41]Taichi Ohno and Setsuo Mito, *Just-In-Time for Today and Tomorrow* (Cambridge, MA: Productivity Press, 1988). *Kanban* is "just-in-time" information derived from the workplace. It also is no more or less than the information needed. To the "risk-averse," concepts of just-in-time and more-than-enough are comforting. See also Taichi Ohno, *Toyota Production System: Beyond Large-Scale Production* (Cambridge MA: Productivity Press, 1988).

[42]Mark Tapscott and Kay Atwal, "New Weapons That Win Without Killing On DOD's Horizon," *Defense Electronics* (February 1993), 41–46. See also: David A. Fulghum, "ALCMs Given Nonlethal Role," *Aviation Week & Space Technology* (22 February 1993), 20–22; "Nonlethal Weapons Give Peacekeepers Flexibility," *Aviation Week & Space Technology* (7 December 1992), 50–51 and "Army Prepares for Non-Lethal Combat," *Aviation Week & Space Technology* (24 May 1993), 62–63.

[43]T. E. Hulme, *Speculations*, edited by Herbert Read (London: Routledge and Kegan Paul, Ltd.), 25–26.