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Learning from Wargames: A Status Report

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> "War cannot be divorced from political life; and whenever this occurs in our thinking about war, the many links that connect the two elements are destroyed and we are left with something pointless and devoid of sense." -- Carl von Clausewitz[1]

Historically, military force structures have proven to be long-lived, and weapon systems form habits of thought and supporting lobbies that change very slowly. It is not a truism, however, that militaries can't change, and change rapidly, when encouraged to do so. The Joint Staff has advanced the concept of a system of systems, within which the services would harmonize their visions of the future and the procurement of new materiel. All the US armed services have developed systems from which they propose to determine their requirements for personnel, equipment, and doctrine well into the next century.

This article describes an analytical process developed by the US Army in the mid-1990s and its application to shaping a process of change within the context of emerging US defense requirements. The vehicle for assessing possible change--for identifying hypotheses and challenging assumptions--is a family of research wargames introduced at the US Army War College in 1996. Selected significant impressions from the first two of those strategic-level wargames show how hypotheses about the long-term future can be identified and assumptions challenged, how possible change agents can be identified, described, and evaluated. The Army's goal is a process through which it can describe and refine capabilities it may need in the long term, as a member of the joint force that supports the national security strategy of 2025.

The Planning Model

As the US armed services began drawing down in the aftermath of the Cold War, shedding personnel and equipment and returning units from overseas garrisons, it became increasingly evident that they faced unprecedented challenges related to their evolution from what had been to what might be. While the Army grappled with decisions between 1990 and 1993 about requirements for the support of the national security strategy in the near future, it became obvious that technological and social change would soon force all the armed services to evaluate long-term assumptions and challenges to American national security, military force structure, and interservice relationships.

Early in 1996 the Army Chief of Staff, General Dennis Reimer, charged the Army's Training and Doctrine Command (TRADOC) to "conduct broad studies of warfare to about the year 2025 to frame issues vital to the development of the Army after about 2010," and to provide those issues to the Army in a manner that could shape its responses to the changes it faces. This directive followed several years of work by his predecessor, General Gordon Sullivan. Sullivan sought to develop within the Army a willingness to think beyond the bounds of what existed and become accustomed to--if not entirely comfortable with--the ambiguities inherent in defining capabilities for an Army whose generals are just graduating from college.

Planners at TRADOC studied periods of change in US and other armed forces, looking for common experiences from each period. One conclusion was that the Army's current combat vehicles, procured in the modernization effort after Vietnam, would reach the end of their useful service lives around 2010 unless extensively overhauled. The Army therefore faces a difficult decision: either allocate scarce resources now to rebuild 1980s-style combat systems, or

develop new concepts and systems for fire and maneuver that could begin emerging from factories by about 2010. Another was that the impetus for developing new systems of warfare--or reaffirming the old-- ultimately would have to come from within the service. The planners concluded that all previous examples of successful--read enduring--modern change in military activities had come from inside the institution; the tank, the aircraft carrier, the long-range bomber, blitzkrieg, and airmobile operations all were products of "the system," not the work of a single brilliant individual or of outside reformers.[2]

The model that has evolved as Army planners considered what to do and how to do it is anchored in two beliefs: first, "vision" must generally drive technological development; second, resource forecasting techniques currently used within the Department of Defense must be accommodated. The resulting concept for managing change evolved into a series of four overlapping periods, within which current realities, the immediate future, and the period in question--the second decade of the next century--seek equilibrium among the demands each imposes on the Army to remain combat-ready while undergoing change. The sequence is portrayed in Figure 1, below.

Present	POM	Potential	Possible
Budget (+ 2-4 years)	Budget (+ 4-10 years)	Circa 2010	Circa 2025+

Figure 1. Concept for Managing Change.

The dynamics in the figure reflect today's mission-ready Army, operating on current doctrine (which has a life span of about five to seven years), with its budgets for the following several years emerging from the staffing and appropriations processes.[3<P255BJ0> In the second section is the Army's combat-developments army, governed by the influence of DOD's Program Objective Memorandum (POM). Army planners agreed that no major changes would be possible within this period because programs and force structures--albeit not fully funded--have already passed the tests of need, utility, and feasibility when measured against the threat assessment through about 2010. There would be little to gain either procedurally or materially from reviewing this part of the process; besides, risk assessments indicated that there was no requirement to alter substantially US force capabilities until late in the first decade of the next century.

The third segment represents the potential Army, one whose requirements and capabilities are not yet defined. This force is linked intimately to the analyses of alternative strategic futures represented in the fourth, or "vision" segment. The third segment, or domain, reflects decisions that direct investments in long-term research and development--for example, in the development of new fuel-efficient engines, new systems of logistics, and the search for other breakthrough technologies and organizational plans that might change the way the Army fights, even in the near term. The third segment is where concepts and emerging technology meet. Far enough away from POM pressures to allow for experimentation and pulled forward by the vision of the long-term future, the third segment of the development process is the most critical, probably will be the most difficult to manage, and has not heretofore been defined in these terms. It also does not now exist in the form presented here, particularly in its relation to the Army's strategic planning process that culminates periodically in a statement of the Army's "vision."

The fourth segment is the domain of long-range politico-military gaming--the Army War College wargame series. By using long-range gaming as a forum for multidisciplinary research, the Army believes it can, over time, produce a coherent vision of the future that will satisfy the Chief of Staff's charge. While the constantly evolving product will never be as clear as military planners would prefer, it should provide a flexible basis for strategic debate and emerging impressions of future war that can provide direction for Army long-range planning. This concept can sustain three other functions. The game series provides opportunities for the other services to contribute to the Army's (and their own) understanding of future war (and Army gamers now attend other service games as well). Second, it provides one of a number of means for national defense authorities to explore the future for their own purposes--but in this case, in an Army forum focused on landpower. Last, it should free an Army Chief of Staff from the need to convene, on a semiannual basis, a crisis-meeting of smart colonels to produce another "vision statement" of the Army's future in time for this budget hearing or that roles-and-mission debate.

Army planners soon realized that the force to be fielded around 2010 could not evolve in a strictly linear fashion from

the force in which they had served as junior officers, or even from the planned "technology-enhanced" post-Cold War force. The Army therefore is attempting to steal a march on change by exploring, in the fourth segment, potential strategic environments that could appear around 2025. Hence the connection between the last two segments of the diagram and the role to be played by the Army's new family of wargames. The Army is testing the proposition that materiel research, development, and acquisition, force structuring, and training needs for the second and third decades of the 21st century can be shaped through a vision based on intense and continuous analysis of ways in which the strategic environment might have changed by 2025. This concept can incorporate non-linearity and acknowledges the opportunities inherent in shaping change in complex adaptive systems.

From such strategic planning will emerge the hypotheses and assumptions upon which operational doctrine, tactical procedures, and the requisite materiel can eventually be designed, evaluated, procured, and packaged in Army units capable of responding to threats from traditional and unorthodox adversaries after 2010. In the first two segments of Figure 1, information and decisions flow from the present to the future. In the final two, the flow is reversed, from 2025 and beyond "backwards" into research and development. The product of the final two phases is the materiel and doctrine needed to win wars in the period after 2010. This process of providing guidance to Army planners is the stuff of wargames; the first two games are discussed in detail in the remainder of this article.

Defining the Games

The Army needed a family of strategic-level "research" wargames that were sufficiently flexible to reflect emerging issues and robust enough to challenge participants emotionally as well as intellectually. To confront the brave new world on its own terms, the Army drew on the Navy's long experience with its annual GLOBAL wargame, the work of the Office of Net Assessment in the Office of the Secretary of Defense, and on its own early 1990s experiences with the Louisiana Maneuvers and battle laboratories. Planners decided to focus the Army wargames at national and theater strategic levels, thereby creating a context within which they might examine the large issues that will shape future US defense policy and resulting concepts of warfare. Tactical combat, with its myriad details and complexities, would not be featured in the games. It could be simulated to the extent necessary for the larger-scale games, then worked in detail once the strategic environment had been explored in depth and research had progressed toward the "third stage" of research and development.

The new strategic-level games also have remained aloof from the concerns of most of the Army's combat and support branches and schools, which are properly concerned with the more immediate needs of the period to 2010.[4] Additionally, the Army has encouraged open discussion among all services, cooperating defense agencies, and other relevant organizations about the relative roles of conflict domains: land, sea, air, and space. Because the period being analyzed (2020-2025) is so far removed from Defense budget pressures, service representatives have generally approached the games with refreshing objectivity. Even so, it was obvious from the beginning that the game process and results could raise some interservice hackles, and that has indeed occurred more than once.

Several implicit assumptions have guided the development of the games. Planners were acutely conscious of standing at the cusp of a critical time in US history. The collapse of the Soviet Union, accelerating technology, sweeping social change, and many other factors had already affected US national security. Conversely, cascading social and technological changes make long-range assessments of force structure and materiel requirements extraordinarily difficult. Other assumptions, heretofore not publicly discussed, also played their part in determining the concept for and context within which the wargames would occur.

Those responsible for designing the games were aware of the Army's inability at the beginning of the Cold War to articulate clearly the need for balanced strategy and forces. Some believed that interservice strife during the late 1940s and the 1950s had left the United States with an unbalanced security strategy overreliant on atomic weapons, with non-nuclear forces correspondingly unprepared for the Korean and Vietnam wars. The success of future security regimes would rely, they believed, on defining a mix of capabilities suitable for a rapidly changing international security environment. It is the Army's responsibility to articulate clearly and develop effectively the role of landpower in the early decades of the 21st century.[5]

Let the Games Begin

The first prerequisite for developing the wargame series was to define a future political world. Academics and intelligence specialists helped to prepare a broad "history of the future," one that proved useful to all the services during preparation and conduct of the games. A key component of the history of the future is an assumed US defense policy of 2025 that defines future American vital interests in terms of an internationalist, outward-facing orientation. Each game requires knowledgeable players for each major country in the scenario; former ambassadors, CIA specialists, and academics with in-depth knowledge were among those recruited. For example, when a US "President" and a cabinet organization were needed to direct the US interagency process, players came from the ranks of senior former government policymakers and elected representatives. Individuals who had held key positions in real life were recruited and carefully briefed, for all understood that the value of game outcomes rested on the insight of experienced, senior-level players.

Conflict results were determined through a combination of computer simulations and evaluation by a staff of specially recruited expert assessors, who portrayed and evaluated theater-level combat. The assessors relied on "best-guess" simulations of future capabilities to evaluate technologies such as space-based weaponry, information operations, and communications. The depth and detail of the first two games produced exercise "game books" that have taken on lives of their own as source materials for other comparable wargames.

The first game (winter 1996-97) focused on the most serious future threat to US security: war with a major military competitor in which US vital interests were immediately and recognizably at stake.[6] The second game (September 1997) featured a setting in which the United States had less than vital interests involved in a conflict with a nontraditional, technologically sophisticated, quasi-national organization. Both games were based on roughly the same history of the future (with the exception that neither war appeared in the other war's history), and both assumed roughly the same balance of forces worldwide. As the Blue force in 2020, the US Army in both games was in the process of modernizing from the by-then "legacy" forces of 2000-2010 to the new forces of post-2010. The other US armed services, upgraded by their own service staffs to portray mixes of 2010 and 2020 forces, were scaled to realistic development and fielding cycles.[7] Other developed nations were assumed to have capabilities roughly comparable to our upgraded Cold War force of the late 20th and early 21st centuries.

The forces of the two major military competitors in the first game, Red and Pink, were roughly symmetrical to those of the Blue nation: inferior in some ways, stronger in others. In the second game, however, the intent was to explore a significantly asymmetrical threat from a non-state entity. Orange, the adversary, was engaged in a long-running insurgency within a state friendly to the United States. Over time, Orange had become a high-technology criminal enterprise, still with the trappings of political insurgency, but with a worldwide network of legitimate businesses, banking interests, narcotics and arms trafficking, and piracy. National-level intelligence organizations contributed to the definition and characteristics of the Red and Pink states.

Except for the opening scenario, both Army wargames were conducted as unscripted, free-play activities. Events and their consequences were determined by participants rather than by a script. One consequence of the free-play methodology, which Army planners believed was necessary for "futures" gaming, was that none of the significant game findings had been anticipated. To dampen personality-driven results, however, repetitive games with comparable settings but with changing casts of participants will be necessary to find recurring themes that might reveal the outlines of future warfare. This is the same general approach that gave the Navy's GLOBAL wargame great credibility during the height of its influence in the mid-1980s. The difference, of course, is that we then had a real enemy in the Soviet Union and we were looking about five years ahead. In its games, the Army has no defined adversary and is trying to reach out 25 to 30 years. It's a very tough stretch.

Emerging Insights

Sir Michael Howard once said that military planners trying to forecast the future of war will probably get it wrong; that does not, he added, relieve us of the responsibility for trying, but planners should try not to get it "too" wrong. Because of the difficulties in working the long-term future, planners are careful to point out that hard "lessons" aren't what comes out of the games--that's too definite. At best, planners can hope to distill emerging impressions that come from strategic wargaming in a future still undefined.

The wargame series' emerging impressions are collected after each game by TRADOC's analysis center at Fort Leavenworth, Kansas, and eventually compiled in an annual report to the Chief of Staff, for his use in developing the Army's vision of the future. The following impressions have come from the two games thus far; others are contained in the report. All, of course, are tentative until these themes recur (or fail to recur) in subsequent games.[8]

The political-military intersection will require careful and continuous attention by all participants during a crisis. While this may strike some as a blinding flash of the obvious, the speed of future politico-military events may lead to a significant shift in the relationships between elected and appointed officials and their principal senior military advisors. The political aspects of the first two wargames caused some discomfort, mostly because the game President or members of his cabinet did not conform to conventional military thinking about responses to various crises. Not surprisingly, the most difficult part of the first two games was creating a consensus that hostilities should begin. As an example, Ambassador Richard Armitage, a distinguished defense authority, portrayed the President for the 1996-97 winter wargame. At the appropriate times his authentic reluctance to go to war (and the inability of his cabinet to convince him he should) caused some senior military authorities to question the value of including a powerful President in future games.[9]

But one result of Armitage's role playing was Red strategic initiatives that highlighted a startling view of US dependence on the military use of space, which raised intense interest in space warfare that continues to reverberate through wargames conducted by the Army and the other services. That's "research wargaming." In the real world, political leaders on all sides impose restrictions and conditions on their military forces that shape military strategies. *That's war*. Senior military personnel should not find this odd. Soldiers understand--or ought to understand--that politics and war are inseparable, and the two games have indicated that the ties may become even closer in the future.

As the military instrument of power becomes more refined and responsive than its Cold War antecedent, political decisionmakers, despite increased risk, may be tempted to use it more frequently than before. This has certainly been the experience of all the services to date in the post-Cold War period. Indeed, much of the learning thus far has come in the discussions and controversies surrounding the decisions of when and how to enter hostilities. Increasingly, it appears that such decisions have great effect on how the fight is conducted operationally. Strategic-level wargames that do not adequately address pre-conflict policy development are incomplete. Decisions by experienced policymakers may have frustrated for a time those players who wanted to move quickly into operational-level gaming; but those same discussions of future defense strategies ultimately led to discussions of long-term defense policy--and the Army--inside the Beltway, to the Army's benefit.[10]

The nature and rate of technological change are difficult for even the serious observer of current events to comprehend. One of the consistent difficulties in gaming the future world is portraying the future in a way that senior, experienced people can internalize and use as the basis for their contribution. A senior Air Force general once remarked to the author that "you'd better get captains and majors to play, because the generals and colonels just can't get it." While that comment isn't true across the board, game planners indeed have to balance senior, experienced judgment--wisdom, if you will--with the technological awareness that mostly junior officers bring to the games; this is especially true in space and information warfare technologies. Though many approaches have been tried, no service wargame has yet been successful in combining the experience and wisdom of senior players (military and civilian), junior players who have the technological acumen to understand the potential of future trends, and a scenario that compelled both to share their knowledge and expertise.

No future scenario is as difficult to portray, and as pregnant with change for future warfare, as the domain of information. Some impressions:

. Pervasive global communications may well prove to have a moderating political influence on war. Financial capital, which even today flows freely between worldwide markets, will likely move away from instability and war as quickly in the future as it does today. Capital can impose immediate fiscal penalties on belligerents and add urgency to conflict termination efforts.

. War will get riskier as technology simultaneously shrinks the globe and provides new destructive capabilities to

belligerents. Weapons of mass destruction; long-range delivery systems; electronic attacks on commercial communications, banking, and infrastructure systems; and even terrorism can attack directly the heartlands of combatants. National borders will no longer shield a nation against new forms of assault. While this prospect is much discussed today, little has been done to deal with it.

Traditional calculations of deterrence and relationships between active or potential belligerents have to be revisited because the military use of space and the information revolution will change the rules. Army game planners expected that the importance of maintaining the free use of space in future war would be highlighted by the games, and so it has proven. Since the Army's winter 1997 game, every other major game by the services has featured space as a principal battlefield. No military force can hope to conduct "information-based warfare" without free access to space systems. But the games have shown that the implications of the military use of space are vastly more complex than had been believed. Nuclear weaponry, worldwide communications, and enhanced non-nuclear forces suggest that deterring war under conditions likely to exist in 20 years may be much more difficult and complicated than acknowledged in Cold War models. Certain categories of non- nuclear, treaty-compliant space weapons are technically feasible in the near future. These weapons, if developed, have the potential to give any belligerent near-decisive advantages at the beginning of a conflict. Under current treaty regimes the weapons can be launched to orbit an opponent's homeland in peacetime without becoming a *casus belli*. Indeed, now that the military services are examining the implications of space warfare, there appears to be a growing urgency to keep policymakers more aware of military games, so that the art of space warfare doesn't evolve in a policy vacuum. Turning to land forces, the employment of conventional (non-nuclear) forces with the capability to deploy rapidly and strike deeply into an enemy's homeland may change how an enemy views the movement of Army forces in the future. In all games, military and political players alike have remarked on how the speed of events complicated deliberative decisionmaking.

Concepts of information warfare 25 years in the future are very difficult to imagine; they are even harder to develop fully. Information and deception operations in the first two games cut both ways with equal effectiveness. Given the proliferation of information sources in the world of 2025, clarity and honesty may actually be the best policy. Sending signals to an adversary, for example, will probably be through direct, real-time contact, à la Kennedy and Khrushchev, particularly if the stakes are high. As a result, theater and even tactical deception may in certain cases be intensively (and centrally) managed at very high levels to maintain the credibility of national-level negotiations.

At the strategic and theater levels, information operations have been very elusive concepts to portray with fidelity, and discussions all too often focused more on who should conduct them rather than what they should accomplish. At the national level, the armed services might not have the decisive role to play, at least not initially, in shaping national and international information-operations policy.[11]

Military planners, whose comfort level in information operations may be more focused on battlefield activities, cannot long ignore the political and strategic aspects of information operations. Without effective strategic direction, theater- and tactical-level information operations drift, rudderless, just as do more conventional ones. In the communications-rich world of the future, virtually *all* public information has potential strategic implications, and the use of information in warfare is clearly a shared military and civilian domain.

Is the era of the mass army really over? The last major revolution in military affairs took place some 200 years ago, when the mobilized masses of the French Revolution swept aside traditional small, professional armies.[12] It is possible that the US decision in 1973 to move to a high-tech all-volunteer force began a worldwide trend to replace the citizen-soldier with small, highly trained professional forces. Certainly professional soldiers like that option, and on an operational level, the results of the Army's two games thus far suggest the advantages that highly trained, mobile, and lethal forces can bring to the 21st-century battlefield. This is only the tip of the operational iceberg, however. Perhaps high-tech armies would be most effective against other high-tech armies, while an enemy with lower-tech weapons but great masses of manpower might endure and prevail. This needs more study.

In the Navy's summer 1997 GLOBAL wargame, air power had a difficult time achieving decisive results against an enemy spread over a large land mass. The same was true in the Air Force's Global Engagement '97 exercise. In fact, the *strategic winner in all four service games of 1997* was a hypothetical nation with extra-large land mass, huge population, and a mass army that hunkered down under punishment.[13] With game forces at roughly their present

size, but with vastly enhanced capabilities, the United States and its allies have not been able to achieve much more than a stalemate against such an opponent. It would seem useful to record that circumstance as a "real" lesson and move to reopen discussions about the reconstitution of the armed forces via an inquiry into the current state and future prospects of the US defense technical and industrial base. The capability will be needed in the event that US policy commits American military forces into attrition wars or long-term standoffs against a determined enemy.[14] Lots of enemy soldiers are still lots of enemy soldiers, particularly if they disperse into large, friendly, urban complexes, which some expect will define forms of conflict in developed nations by 2020.

In embracing a version of warfare that favors precise attacks and highly mobile maneuver warfare, would the United States be able to prevail against an enemy whose center of gravity might be unreachable by conventional military forces, no matter how high-tech or precise? In an interconnected and transparent world, a near-peer may have vulnerabilities other than his forces or command structures.[15] US military planners tend to think of asymmetric conflict as a set of methods that a non-peer adversary could contrive to use against us. It may well be that we should be thinking of asymmetries we could use against *them*.

Knowledge and Speed

After 18 months of research, the first full report to the Army Chief of Staff suggested that the dominant characteristics of the Army of 2025 should probably be knowledge (to which the Army committed during the tenure of General Sullivan) and *speed*. "Speed" implies a great many things--faster data processing, faster decision cycles, faster logistics operations with just-in-time delivery methods--but most important, it refers to the speed of maneuvering fighting forces, strategically, operationally at the theater level, and across the tactical battlefield. Two overriding factors support "speed" as the second dominant characteristic of the future force.

First, a force that can deploy rapidly at strategic ranges, maneuver theater-wide against an enemy center of gravity, and take down tactical objectives on the battlefield should be capable of forcing decisions quickly and at low cost to the United States. Obviously, vastly superior battlefield knowledge is a foundation of superior speed, but so will be the Army fighting systems that can lift from the continental United States, maneuver en route, link up with other task-organized forces, and attack decisive targets directly.

Second, assuming the inevitable spread of "smart" weapons, speed will be necessary for survival under precision attack, at whatever ranges are then possible. Information available today indicates that by 2025 likely opponents will probably have the same access to space, or nearly the same access, as US forces will. It is probable, therefore, that at least at theater level and on the battlefield, a unit's ability to move quickly, even sprint at high speed to avoid enemy precision attack (much like submarine tactics call for today) will mean the difference between force protection and attrition--perhaps even survival. The 1997 report to the Army Chief of Staff suggested that sprint speeds in the range of several hundred miles an hour might be necessary.

An army formed around the principles of knowledge and speed will very likely organize differently from the US Army in the field today. To achieve the strategic and operational velocity required to survive and dominate, logistics concepts may come to resemble retail delivery at strategic depth, perhaps like the Navy's underway replenishment operations, rather than today's version of the 19th-century depot systems. Army planners seeking to match forms and functions in the Army of 2025 theorize that fixed-base logistics operations may more closely resemble commercial organizations in structure and operation than military ones. If logistics bases are positioned at great depth from the battle area and operate at longer ranges than traditionally has been possible, some combination of commercial and military logistics organization may be feasible. But that outcome presumes precedent-breaking changes in key aspects of logistics management. Some other game-derived thoughts:

. Propulsion systems must be developed that are as fuel-efficient as today's are fuel-hungry. Great strides have been made recently in fuel-cell engines, and more progress can be expected.[16]

. Communications nets of all kinds can be lodged in space, with databases on the ground and data transferred over dense, redundant nets using virtually unlimited bandwidth. These changes can free maneuver units from dependence

on bulky terrestrial systems that are easier to intercept and jam than those in space or near-space. The explosion of space-based commercial systems, now on the horizon, suggests that most, if not all, future military space-based communications may be carried by commercial vendors.

. Fire support platforms may be able to operate far from units in contact; long-endurance Uninhabited Aerial Vehicles (UAVs) can loiter at very high altitude for surveillance and data transfer between troops in contact and the sources of fire support. Armed UAVs can operate in long-endurance orbits above the battlefield, providing direct fire support to land and sea surface forces, thus freeing maneuver forces from carrying heavy firepower and extensive logistics trains.

Changes such as these may enable maneuver units of the future Army to operate with unprecedented freedom, at speeds that make targeting by precision weapons difficult, and under an umbrella of space platforms and UAVs extending from hundreds of feet above the battlefield to the edge of space. This scenario is possible with technology coming into the marketplace today.

Observations

It is not too soon to ask if useful outcomes from the first two Army wargames in this new series can be applied to the development of future national security policy. The games provide a forum that raises serious defense issues, linking all the elements of national strategy that in the largest sense shape service force structures.

Such fora periodically appear and fade from sight. Recent examples include the various groups that have attempted to develop a broad national consensus for a real war on drugs, to explore protective measures against information assaults on the United States, and to explore the consequences of an attack on this country with weapons of mass destruction. What the Army, with the participation of the other services, has created is a *process* of thinking about future conflict in ways that will affect long-term service planning.

Another prospective change affects the idea of joint planning. Each of the US military services needs to be more cognizant of the long-range planning efforts of the other services, and to seek the ways and means to support and accommodate them outside the disagreements that accompany the budget. But the future will place more demands on the US armed services than can be met by "jointness." The formal joint system--the JCS and unified and specified commands, the DOD agencies, and all the rest--are chartered appropriately for present-day warfighting and shorter-term futures. But it is the services, with historic and special expertise in land, sea, and aerospace warfare, that must bring together their evolving concepts of future warfare, which in some respects are remarkably similar in their broad outlines. More work is necessary to identify interdependencies and linkages--in space, for example--before budgetary wrangling begins.

The desired outcomes of these concepts are similar to those of the Army's family of wargames. No one expects them to produce a precise estimate of requirements. Rather, the goal is to describe a range of capabilities that joint and combined forces will bring to operations in the first decades of the next century. The Army is moving in this direction, in the company of the other services. There's plenty of work for all who've signed up, and room for many more.

NOTES

1. Carl von Clausewitz, *On War*, ed. and trans. Michael Howard and Peter Paret (Princeton, N.J.: Princeton Univ. Press, 1976), p. 605.

2. A good argument could be made that the support of an "outsider," Robert McNamara, was essential to acceptance of the Army's airmobile concept of the early 1960s.

3. The next statement of the Army's basic operational doctrine, presently being revised, is tentatively scheduled for publication in 1998.

4. The Air Defense and Intelligence schools were notable exceptions, the latter because of growing interest in

information warfare, and the former because of the expanding role of space and defense against precision missiles--*all* precision missiles.

5. It is curious that, even in the Army, TRADOC's planners were sometimes accused of being "un-joint" for articulating a landpower position. The idea that individual services should not advocate their views regarding their particular expertise is a pervasive, and in the author's opinion, unhealthy view. The services' expertise and long-range development in compliance with Title 10 requirements are fundamental to discharging their responsibility to "train and organize and equip" their personnel. "Jointness" is the integration of capabilities, not a procrustean mold.

6. It is the position of Army futures planners that peer competitors to the United States are unlikely by 2025, but that states with the potential to be major military competitors are likely by that time.

7. A recurring misunderstanding is that AAN forces would be specially constituted "tip of the spear" forces while the bulk of the Army remains the more familiar Army XXI, M1-tank-based force. No. AAN is about changes in the conduct of war that will change the *whole* Army, and may make obsolete older forms of forces.

8. These impressions are generally the author's and are not necessarily those reflected in the official reports. Additional information is contained in game reports and in the two reports prepared thus far for the Army Chief of Staff.

9. Both of the subsequent Navy and Air Force futures games tried to hold their scenarios at the theater level to cut out "politics" and concentrate on warfighting. Both games' play suffered, therefore, from a lack of strategic direction, although, in the Navy's case, an effective National Command Authority was constituted midway in the game. See the Clausewitz quote at the beginning of this article.

10. After the National Defense Panel's report gave the Army some credit for thinking ahead, "Army sources" told the press, roughly, well, we really can't do any of this because we don't yet know all the answers.

11. This is not to say that the JCS won't be key players in national-level information operations, but that the DOD may not be the executive agent that coordinates *all* information operations at the national level; in the summer game, cabinet-level direction of information operations was centralized under the Director of Central Intelligence with a hand-off to the Secretary of Defense for operations in the geographical area of hostilities. In the real world, the Clinton Administration attempted to add an office to the National Security Council to coordinate measures to counter attacks on US computer networks, a sign that at least one facet of information operations is being taken seriously at the national level.

12. Although, of course, like all revolutions, there were exceptions. Small, professional armies remained but they were generally backed up with large reserves and elaborate mobilization plans (or should have been, in the case of Britain and the United States).

13. In three of the four games, the large-mass country was engaged directly. In the fourth, the United States involved itself in a regional brush-fire war, and the large power took the opportunity to profit by increasing its regional influence. The tentative conclusion is that to defeat such a power, some alternative form of military or national power, or a different strategy, must be employed to supplement conventional military forces.

14. Military people mostly don't like this alternative, but, then, the royalist armies didn't think much or Napoleon's tactics, either. Fred Iklé comments in his book, *Every War Must End* (New York: Columbia Univ. Press, 1991) that "no general ever planned a long war." The danger of building a force structure that can't adapt to unfavorable circumstances is that one's enemies are constantly posing those unfavorable circumstances.

15. The current situation vis-à-vis Iraq makes the point. It seems clear that although his conventional military forces in Kuwait were largely destroyed, Hussein managed to shield effectively his strategic command and control structures and, most important, sources of funding sufficient to maintain and rebuild his military power, even as the UN blockade primarily affects the domestic economy and becomes increasingly difficult to maintain.

16. One of the most important long-range strategic services the armed forces could offer to the United States would be

to pioneer a sufficient market for fuel-efficient engines that could ultimately lead to reducing this country's (and the West's) dependence on Middle East oil. Given the emergence of fuel-cell technology and new sources of energy, including oil, it is possible that worldwide dependence on Mideast oil may have lessened by 2025. This is a controversial position, akin to suggesting in 1940 that Malaysia might someday be supplanted as a source of the world's rubber.

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