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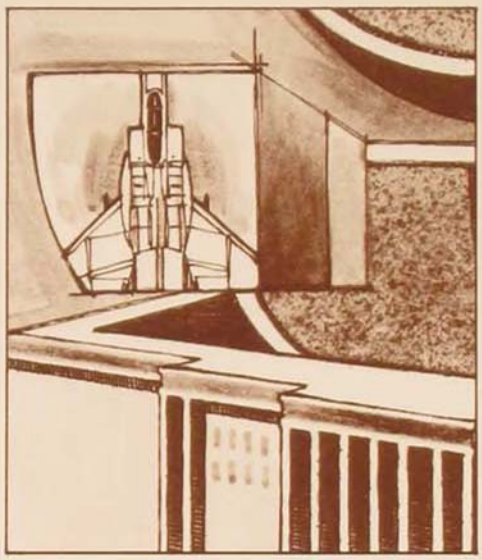
History of U.S. military reform—*page 2*



What changes in DOD do today's military reformers want?—***pages 33, 41, and 47***

Suggested reforms for European d fense—***page 55***

The *Air University Review*, published bimonthly in English and quarterly in Spanish and Portuguese, is the professional journal of the United States Air Force and is designed to serve as an open forum for presenting and stimulating innovative thinking on military doctrine, strategy, tactics, force structure, readiness, and other national defense matters. The views and opinions expressed or implied in the *Review* are those of the authors and should not be construed as carrying the official sanction of the Department of Defense, the Air Force, Air University, or other agencies or departments of the U.S. government.

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the cover

Across a background of traditional eagles equipped for war and peace—symbolic of the Air Force since 1947—flies a lean and powerful eagle ready for action, which today's military reformers perhaps envision. Our issue looks at the ideas of some of those reformers.

MILITARY REFORM IN AMERICA

DR. ALLAN R. MILLETT

SERVING soldiers from time immemorial have recognized that dictated change does not always bring increased military effectiveness, the basic criterion they apply to reform. An unnamed soldier in the army of republican Rome recognized the problem:

> We trained hard . . . but it seemed that every time we were begining to form up into teams, we would be reorganized. I was to learn later in life that we tend to meet any new situation by reorganizing; and a wonderful method it can be for creating the illusion of progress while producing confusion, inefficiency, and demoralization.

The Duke of Cambridge, who witnessed the impulse for reform in Queen Victoria's England, summed up the thinking conservative's view of all reform, civil and military: "There is a time for all things; there is even a time for change; and that is when it can no longer be resisted." Whether the parent state is autocratic, revolutionary, or democratic, its armed forces are not likely to view military reform as an unconditional good. As Alexis de Tocqueville observed, however, the armed forces of democracies had a special problem because they were altered so radically in peacetime periods between wars. The change was not necessarily dictated by size but represented a fundamental challenge of the values of the standing forces. In times of peace, democracies ignored their standing forces, for they knew that in wartime the "nation in arms," for better or worse, would go to the battlefield with a new set of criteria for evaluating military leadership, organization, weapons, and tactics. Skeptical of the adaptiveness of peacetime forces, democracies would dictate that their military establishments would fight and change their institutional character at the same time.

Like many of his other observations in *Democracy in America*, Tocqueville had more to say about military reform in Europe as the seasons of American military reform may or may not coincide with belligerency. They certainly do not match the outcomes of wars. For example, in comparing the results of the Mexican War (1846-48) with the Spanish-American War (1898), one can conclude that both were smashing victories in terms of national objectives. The War with Mexico outstripped the War with Spain in its degree of mismanagement and the near perilous commitment of inadequate military power. Yet it was the 1898 war that set off more than a decade of land force reform, largely because it occurred simultaneously with the Progressive Era. Nor does the importance of the war dictate the degree of reform. The American Revolution gave rise to a generation of rhetoric but prompted little change to the militia system inherited from the colonial era. The War of 1812, in contrast, created the political environment that brought significant change to the War and Navy departments. Nor does military reform require the shock of wars badly won or lost that galvanizes public outcry. Reform in the twenty years

before the Spanish-American War and World War II proceeded with minimal public attention, yet produced important changes in both the U.S. Army and the Navy.

If military reform is purposeful change that improves the U.S. Armed Forces (i.e., the product of public policy), it is not a phenomenon that occurs in either linear or cyclical fashion across time. Even "improve" can mean several things. By strictly military criteria, reform should increase the likelihood that the armed forces will perform their missions in war and peace with increased effectiveness, but reform in the United States seldom meets the standard of pure functionalism. Indeed, some of the most deep-seated notions of military change have included both explicit and hidden agendas that had little to do with military effectiveness in the direct, tangible sense. For example, at one time or another, the federal government has used military reform to encourage infant industry, build continental railroads, teach young males hygiene and physical fitness, further racial and gender integration in the larger society, and educate generations of civil and marine engineers. In fact, American military reform probably includes only one constant: it must not endanger civilian control of the military. In any event, the reason why military reform defies simple explanation is that it has worked in five distinct aspects of the institutional development of the armed forces:

- the organization of the four services that comprise the armed forces and the network of civil, political agencies with which they work;
- technology;
- the social composition of the armed forces and the set of formal regulations and informal mores that determine social relationships in the armed forces;
- the nature and functions of officership in the armed forces; and
- the development of operational doctrine and tactics for force employment.

Reform in each of these five areas has built its own set of historical patterns, and the causal relationship between reform movements has not been nearly so direct as some military reformers believe. In fact, it is closer to the historical experience to recognize that successful reform in one area may retard improvement in others. Such unanticipated outcomes have occurred so often that they explain some of the military predisposition to make change slowly, especially in peacetime. On the other hand, compartmentalized reform may have no effect at all outside its narrow sphere of influence. Thus, military reform in the United States refuses to fit neatly into a historical pattern that points clearly to reform's future.

organization

For their first century, the three existing services (the U.S. Army, Navy, and Marine Corps) developed a dual structure that gave their administrative headquarters in Washington centralized control. Operating forces in the field had little influence on service policy because the service civilian and military staffs controlled budgets and regulation writing, largely to satisfy civilian oversight. Effective power to run the Army rested with the department and bureau chiefs of the War Department. Their counterparts in the Navy's bureaus and the Marine Corps' small headquarters staff had similar power. In wartime, however, this system normally collapsed, since the standing procedures and limited numbers of personnel could not cope with mobilization. By the end of the nineteenth century, the services moved to close the line-staff division through the creation of service general staffs. The Navy began the process with the establishment of a General Board (1900) and the Office of the Chief of Naval Operations (1915), but the Army went further in centralizing military control with its War Department General Staff (1903). The Air Force duplicated the Army system in 1947, although Strategic Air Command established a semifeudalistic autonomy like that maintained by

some portions of the Navy's support establishment. In the twentieth century, the general staff reform movement finally ensured that line officers would dominate their services and provide authoritative advice to their civilian superiors, but Congress has worked to counter this trend by providing staff access through the funding process. The career of Admiral Hyman Rickover is only the most notable example of technocratic insurgency.

The pressure for interservice collaboration—some coming from civilians, some from military officers—coincided with the growth of the general staff movement and in some ways competed with it. The Joint Board (1903) coped with such joint service responsibilities as coast defense, aviation policy, and amphibious operations, as well as advising the service secretaries on war plans. Replaced by the Joint Chiefs of Staff system in World War II, the Joint Board showed characteristics of joint planning that still prevail. The board had only an advisory role; it could not make decisions, which required active civilian participation and a willingness to decide. The joint planning system dictated that interservice disagreement would surface, whether the issue was the defense of Subic Bay or the management of military space programs. The organizational response to this condition after 1947 has been to increase the power of the Secretary of Defense and, much less significantly, the power of the Chairman, Joint Chiefs of Staff. Drawing from service experiences, the reformers have assumed that more centralization alone will improve joint collaboration. But service-level centralization rested on a different problem: the ascendancy of line officers in service planning within a system of civilian control. The debate on joint planning now focuses on force employment issues that require strategic guidance from political authority, something noticeably absent throughout the entire history of the general staff reform movement. During the one period in which that guidance came with a vengeance, the tenure of Robert S. McNamara as Secretary of Defense (1961-67), the entire system shuddered and eventually rebelled.

technology

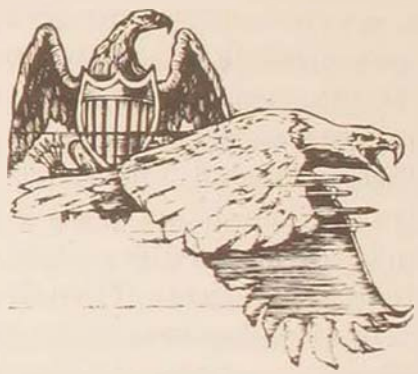
Since the earliest bureaucratization of the armed forces, technological change developed as a constant focus of military reform. Only the issue of technological adaptation has been a constant, for the pattern of change itself has varied. In the design of military vehicles and their different power plants, reform has normally wedded government designers and civilian innovators and producers, linked by a delicate balance of military need, psychic satisfaction, and monetary profits. Through World War I, this military-civilian collaboration produced sailing ships, the first ironclads and steel warships, Army wagons and their braying "power plant," railroad systems (most notably during the Civil War), automobiles and trucks, and airplanes. Although the pattern of collaboration has continued into the 1980s, it has been affected by the growing specialization of military vehicles, increased unit cost, and the length and complexity of the design and procurement process. Procurement, however, since the Frigate Act of 1794, has always been a political issue, which it will remain as long as Congress exercises its fiscal powers. Changes in military vehicles, an area of high need and high cost whether the vehicles carry weapons or simply provide transportation, will continue to be in the forefront of technological development because the mastery of time and space remains a central criterion for military effectiveness.

Ordnance development, on the other hand, has been made principally on the arsenal model, since military ammunition, cannon, and fusion warheads have little commercial appeal. Ordnance development had depended more on nation-against-nation military assessments of weapons effectiveness than military-civilian comparisons, which shape evaluations of vehicles. Except for the occasional intervention of individual inventors (e.g., John Brown-

ing and John Garand) into the arsenal system, ordnance development has been the province of military bureaucracies, which tend to balance promised increases in firepower with questions of tactical effectiveness and logistical feasibility. If there is any historical trend in weapons development, it has been that the capabilities of the platform vehicles have often exceeded the ordnance they carried, at least until the development of nuclear and terminally guided conventional munitions.

The change of military infrastructure reflects a different historical pattern. Military investment in construction (e.g., coastal defense fortifications, naval and military bases and airfields, civil engineering projects) has declined and been replaced by investment in electronic command and control systems with global and extraterrestrial reach. Like the development of vehicles, both military construction and electronics have depended on close military-scientific-commercial interaction. At an ever-accelerating pace, the application of electronics for military purposes has dictated a bond between commercial exploitation and military application that cannot be divided. The trend began with the development of the telegraph, radio, and the electrification of warships into the use of radars, computers, infrared sensing, satellite and aerial photography, and microwave/space relay communications. In a sense, the growing importance of military information processing and analysis reflects the more widespread shift of the American economy from industrial to service entrepreneurship. Whether the microchip and solid-state circuitry will prove as important a quantum leap in the effectiveness of military command as the vacuum tube remains to be seen.

Although ideally the adaptation of military technology might be separated from domestic partisan politics (as distinguished from bipartisan military pork-barrel politics), such has not been the case, largely because military procurement always seems to carry social and political benefits of little military relevance. Historically, military procurement has been used to stimulate cutting-edge industrial giants (in shipbuilding, steel, and aviation, for example), to encourage small businesses, to strengthen labor unions and minority employment opportunities, and to sustain a broad academic-industrial research and development infrastructure. Whatever the wisdom of this public policy, it politicizes technological reform, since both major political parties have populist factions that see corporation-governmental collaboration in terms of imperialist intervention abroad and economic exploitation at home. Despite the yearning of technologists, the concerns of the laboratory, factory, and military user alone are unlikely to shape technological reform.



social composition, structure, and behavior

Since the first ill-fated campaigns by the Army into the Northwest Territory and the first cruises of the frigate Navy against Barbary pirates and French privateers, American military commanders have argued that they could do much better in the field with better men. Those "better men" should not desert and should stay sober (at least on duty), obey superior officers and NCOs, and show some interest in training and physical fitness. They might even fight. In peacetime, the military recruiters did not have much success in drawing sturdy yeomen and fishermen or intelligent clerks into the ranks and crews, but throughout the nineteenth century they did attract pliant immigrants, wayward youths, and occupationally displaced workers into the peacetime services. Fortu-

nately, they knew, the services would be more representative of the nation's male talent in wartime because volunteering and conscription (usually a subtle combination of both) would bring citizen-soldiers and citizen-sailors into the Army and Navy. These servicemen would not stay for the following peace. Indeed, until the twentieth century, they often went home legally even before the war ended. The services knew that these phenomena existed and tried to close the quality gap between the peacetime and wartime services. They are still trying.

Most personnel reforms designed to attract quality people—defined as trainable men in good health—came from the services themselves in collaboration with Congress. The reforms focused on "more"—more pay, more rank, more and better food, improved living conditions, more off-duty recreation, more health care and retirement benefits, more religion. They also focused on "less"—less corporal punishment, less issue alcohol, less menial work, less capricious discipline by martinet superiors. In terms of eliminating the unattractive aspects of service life, the armed forces often found themselves allied with unlikely co-reformers that ranged from the antislavery movement to legal rights groups. While they may have had the rights of servicemen in mind, civilian reformers had little interest in military effectiveness, having more concern in using the military as a laboratory for social experimentation.

The armed services had a good idea of what sort of people they did not want in the ranks, except under duress. Southern and Eastern Europeans, Jews, black Americans, Indians, Hispanics, Asians, and women all found entry and career advancement impossible or difficult at best, but as their political power grew in American society, so too did their influence on military personnel policies. In some cases, the armed forces moved more rapidly toward equal opportunity than civilian institutions; sometimes they did not. In any event, wartime service normally paved the way for better military careers, for the twentieth-century American military establishment could not defend its insular possessions or man the forces committed to forward, collective defense after 1945 without modifying its social structure. Enlisted service for a special group usually led eventually to admission to the officer ranks, sometimes at the insistence of civil rights groups with influence on Congress. With greater access to formal education and powerful formal and information sanctions against other than meritocratic advancement, minorities have demonstrated that increased military effectiveness may be compatible with social reform. The lesson, however, has not been painlessly learned by all parties or free of ambiguity.

officership

Military professionals did not find the North American continent hospitable from the earliest settlement, as the travails of Miles Standish and John Smith attest. The low state of career officers had nothing to do with the requirement for their services, which the Indians and French kept at a high level. Little had changed by the end of the Revolution, as Hamiltonian Federalists learned when they tried to create an academy and cadre of professionals to train their "federal select militia."

The Navy had less difficulty finding a professional identity for its officers, since the occupation of mariner/ships officer had high status in a country that boasted a world-class merchant marine. Moreover, a Navy officer could show his commitment to the entrepreneurial seacoast culture by seeking prize-money like his privateering brethren and by his diplomatic efforts to expand American commerce abroad.

Army officers—except those who served as explorers, surveyors, and civil engineers—had little to offer the nation; even in wartime, they shared preferment with citizen-officers whose overall excellence and ability to recruit made them more valuable than regulars. Even the

establishment of the Military Academy (1802) and Naval Academy (1845) did not advance the concept of special skill and public trust, for appointments to the academies soon became part of the political patronage system. Not until the post-Civil War period did academy graduates dominate the services, and then the Army had to accommodate officers whose volunteer wartime service drew them to a postwar career. Moreover, the larger society no longer ignored former wartime commanders (indeed, it elected some president of the nation), and it also rewarded a host of technicians, inventors, organizers, managers, and scientists who happened to wear uniforms.

The reform of officership in the U.S. Armed Forces largely came from within the officer corps itself and from officers who believed that peacetime education for wartime command defined military professionalism. Some of the officers' inspiration came from the debacle of the Civil War, some from foreign military practices, and some from the example of civilian professionals and businessmen.

By World War I, all the services had taken giant steps to establishing preparation for wartime command (or operational staff service) as the fundamental justification for military professionalism. The signs of reform were everywhere: in school systems for midcareer education, in the movement toward promotion by merit and board selection, by personal efficiency reporting, by the rotation through line and staff assignments. The giants of World War I and II emerged from this system and gave it its ultimate sanction. To their credit, the officers of the Army (Sherman, Upton, Schofield, Wood, Pershing, Marshall), Navy (Luce, Mahan, Sims, Pratt, Fullam, King), and Marine Corps (Barnett, Lejeune, Russell, Holcomb) who championed the professionalization of officership did so most often in the face of (at best) public apathy. They also persisted in the face of opposition from many of their fellow officers, who preferred to rely on their political contacts, bureaucratic expertise, and romantic notions of charismatic battlefield leadership. The career officer as "manager of state violence" owed little to civilian inspiration or assistance. As long as professionalization could be squared with access to officership based on education and performance and did not menace civilian control, political leaders accepted it.

The cold war, however, resurrected the dual definition of officership common in the nineteenth century, destroying the dominant identity of the officer-as-commander and rational planner of military operations. Officers explored space and the ocean depths, not just mountains and harbors; officers functioned as corporate managers and technicians in massive installations and nuclear laboratories, not railroads and gun factories; officers guided interservice and coalition commands and military assistance groups in foreign lands, not just negotiated with the Cheyennes and Fiji Islanders; officers moved freely throughout the national security bureaucracy rather than simply in and out of their service bureaus. In a sense, the power to serve the public good corrupted the core definition of officership, setting the stage for a collective malaise triggered by the Vietnam War. Since much of the crisis in professionalism was rooted in the changed values that the officer corps itself had encouraged, there should be little wonder that officers have preferred to carry on the redemptive or redefining process themselves rather than allow Congress, academic gurus, and the media to prescribe ill-suited cures for their unique diseases of the spirit. The general social pattern of professions reforming others but not themselves has little to recommend it.

operational and tactical doctrine

The general concepts and procedures that guide the employment of military forces in campaigns and battles emerged in the nineteenth century as the intellectual core of officership, an acquired mix of art and science.

Unlike strategy, so dependent on transient political goals and subject to the whims of wartime leaders, operational and tactical doctrine required a beguiling mix of universal principles and situational adaptations that fused the capabilities of one's own forces and one's enemy as well as considered the physical environment in which those forces would meet one another. Moreover, operations and tactics demanded that a commander *do* something, not just think about it—a responsibility that required emotional and physical sturdiness, not just intellectual skill. In land warfare, battles moved from sequential concepts (the artillery fired, the infantry attacked or defended, the cavalry skirmished and then pursued) to the combination and integration of arms in simultaneous combat, complicated further by the advent of the airplane. At sea, single ship actions progressed to squadron, then fleet surface operations, then major naval campaigns that included submarines, fleet aviation, surface combatants, and amphibious forces. Fighting with allies in the world wars, in Korea, and in Vietnam further complicated the crafting and adjustment of doctrine, as did the introduction of the concept of deterrence based on the threat of nuclear weapons. The technical lethality of weapons in terms of the volume of fire such weapons could produce over ever-expanding distances presented additional problems to doctrinal reformers. Technological anxiety (will our weapons work as well as the enemy's?) reinforced organizational anxiety (will our system of command and logistics suffice when Murphy's Law replaces the current SOP?).

Operational and tactical reform in the U.S. Armed Forces has been largely the province of the officer corps, which has done a surprisingly good job in peacetime in changing the services' operational concepts. The old saw that the military refights the last war bears little reality to the process of adaptation, since much doctrine comes from a desire *not* to fight the last war again. Whether the reformed doctrine actually fits the next war is, of course, another matter, but the Armed Forces of the United States at least had the pleasure of fighting World War II almost precisely as they thought they would in terms of operational concepts, if not in terms of place and timing. Perhaps that experience was too satisfying.

Doctrinal reform has invariably created serious internal disputes within the officer corps of every service, a condition that makes intervention by outsiders especially unwelcome. Doctrinal adaptation is like a civil war, noteworthy for the high stakes and the intensity of commitment it spawns. Outside intervention may be important but is never fully welcomed, even by the winners. When doctrinal reform coincides with other types of reform, however important and well-intentioned, the effect on a service may be wrenching. The process is even more complicated when the doctrine requires interservice negotiation, in part because joint doctrine creates additional opportunities for extramilitary intervention. Thus, the development of air power doctrine in this century, especially when it became linked with nuclear weapons, proceeded with consistent messiness from the Billy Mitchell era through the "revolt of the admirals" in 1949 into the questions of control of helicopters, close air support squadrons, and military transports. Similar disputes have characterized the question of special operations forces, whether they were Marine raiders in the Pacific, Ranger battalions in the European theater, or Special Forces detachments in Vietnam.

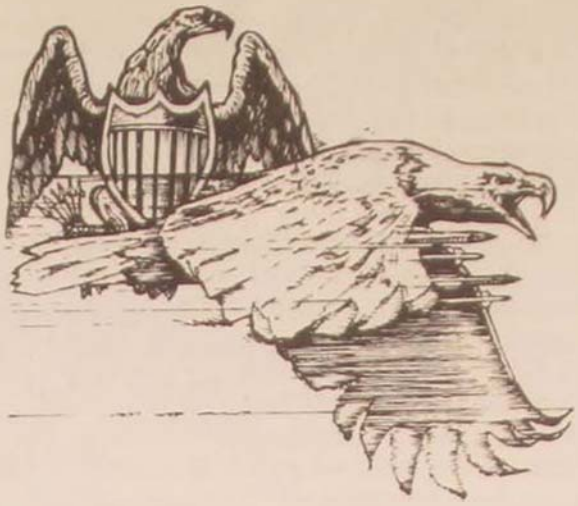
The importance of operational and tactical reform is seldom in question, but no intelligent military leader can regard it as a pleasant experience. The only more perilous situation is to remain wedded to the status quo and find that adaptation must be built on the burning wreckage of one's materiel and the bodies of one's comrades.

THE history of the U.S. Armed Forces provides many examples of adaptation across the entire range of organizational, technological, social,

professional-occupational, and operational concerns that have drawn reformers' interest. But reform has seldom been driven by concerns for military effectiveness alone. Eventually, reform, because of its political nature, may achieve legitimacy with the nation's political leadership, but it also carries a cost—a cost extracted in time, money, interservice harmony, and the full faith and confidence that should characterize civil-military relations. Military reform is much like the very nature of republican government itself. As Federalist Congressman Fisher Ames observed, an autocratic government is like a beautiful sailing ship, fast and steady in a fair breeze, but prone to floundering in foul weather. A republic is like a raft, ungainly, unsightly, and nearly uncontrollable even in calm waters. But it never sinks, even in a gale. Nevertheless, one's feet are always wet.

Ohio State University

EDITORIAL



INDIVIDUALS, INSTITUTIONS, AND THE IMPULSE FOR REFORM

LIKE individuals, institutions ossify with age. Goals and objectives become part of the warp and woof of corporate personality, enforcing conformity and demanding unity of purpose from those who are part of the institution. When service to institutionalized goals becomes an objective unto itself, a bureaucratic rigidity develops that stifles initiative and, ultimately, causes atrophy and impotence. That is when the invigoration of reform is needed.

Only the strongest establishments can reform themselves. Those that seek to foster change from within must, in most instances, be prepared for the lot of martyrs. On the other hand, reform from without can be unduly abrasive, destroying rather than improving. The successful reformation usually results when insiders work with interested outside parties to bring about constructive change.

The Protestant Reformation and the Catholic Counter-Reformation provide good examples of successful reorientation and reconstitution. In 1520, the Papal Bull *Exsurge* demanded that the monk Martin Luther either recant his position on reforming the Church or be branded a heretic. Luther became an unenthusiastic revolutionary.

Martin Luther loved the Church. He did not seek to destroy it, but he was a determined advocate for redirection and reform, particularly in the area of finances. When Luther criticized the sale of indulgences, he did more than probe at a lucrative practice that was vital to financing Europe's most lavish court: he ultimately raised questions about doctrines basic to the Church's existence, including that of papal infallibility. However limited Luther's impulse for reform was initially, the consequences were dramatic.

The Air Force, like the medieval church, is subject to the vicissitudes of institutional life. As the Air Force matured, particularly after it attained its independent status in 1947, goals and objectives were incorporated, and air doctrine was defined and developed. Such processes are proper and common for any military service. However, if doctrine has become dogma, reformation may be needed. Like Martin Luther, today's military reformer seeks to correct rather than to destroy. In Luther's day, it was the Infidel Turk that actually sought to destroy Christendom. Today, it is the Soviets who wish to obliviate the American way of life, with all of our institutions. Military reformers are neither infidel to our military ideals nor Communist, and it would behoove us not to use the terms *heretic* or *adversary* too freely.

Even the most facile study of history teaches that the impulse for reform is virtually irresistible to all but the very entrenched. If accommodated, reform can improve the institution, strengthening it through evolutionary rather than revolutionary development. The United States government is an example of an institution in a continuous state of reformation. Imperial Russia's tsarist autocracy, on the other hand, could not accommodate much-needed reforms advocated by socialists, democrats, and Mensheviks. The resulting Bolshevik revolution swept away autocrat and democrat

alike. The Roman Catholic Church, in contrast, though shaken by Luther and subsequent reformers, undertook its own reformation to survive today as the largest and single most powerful religious institution in Christendom.

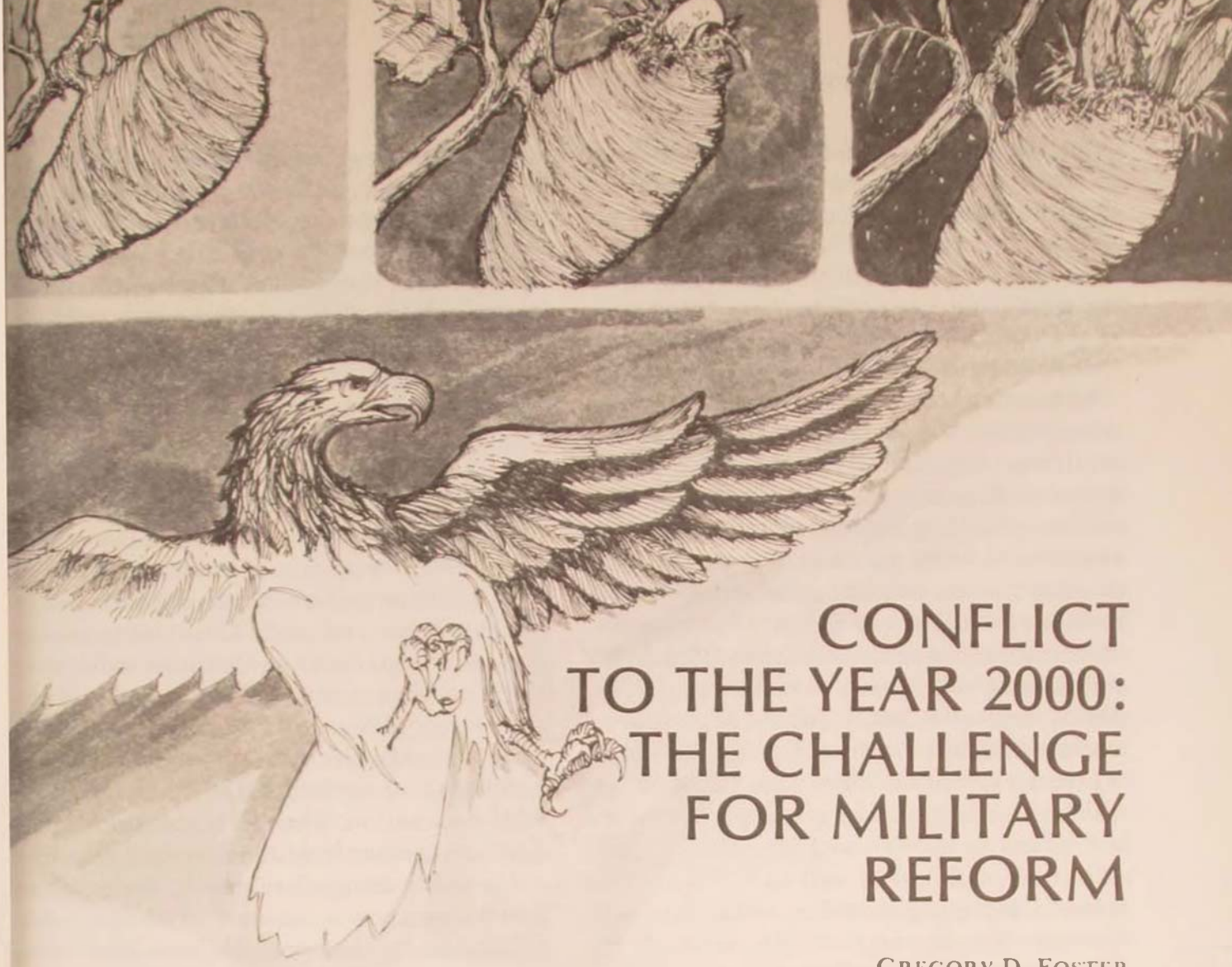
Martin Luther's impulse for reform was, at its essence, a personal thing. It began with his own passionate commitment to understanding what he was all about as a Christian and a cleric. His road to reform began with a search of the Scriptures as he sought to better understand his own relationships with God and with the Church of his time. For Luther, the Reformation began with himself.

Whether we consider ourselves reformers or defenders of the faith, we would do well to reexamine our own commitment. Officership, involving service and sometimes self-sacrifice for the good of the greater society and the lot of humanity, may be as much priesthood as profession. Just as the clergy faces the awesome responsibility of dealing in questions relevant to temporal values and eternal existence, so too military officers must master their own set of awe-inspiring imperatives, dealing as they do, ultimately, with life, death, and defense of the nation. That kind of charge demands the stuff of total dedication that transcends institutionalized interests. If self-preservation and promotion within the institution have become our goals, reform might best begin with a rigid examination of what we ourselves are all about. A rereading of both our commissions and the oath of office might be helpful. We could find ourselves paraphrasing Shakespeare's Cassius in the play *Julius Caesar,* "the fault . . . is not in our stars but in ourselves as underlings."

E.H.T.

Ira C. Eaker Essay Competition

Winners of the 1985 Ira C. Eaker Essay Competition will be announced in the November-December issue of *Air University Review.*



CONFLICT TO THE YEAR 2000: THE CHALLENGE FOR MILITARY REFORM

GREGORY D. FOSTER

THE noted inventor and philanthropist Charles Franklin Kettering once observed: "We should all be concerned about the future because we will have to spend the rest of our lives there." How embarrassing that such a statement of the obvious should embody a degree of wisdom lost on most of us, for the future holds far too many secrets to warrant the sanguine indifference with which it is typically faced.

The strategic environment of tomorrow promises to be vastly more complex and demanding than anything that has confronted the United States during its brief history. This will necessitate a degree of foresight and planning sadly absent in recent years. Foresight and planning will be for nought, however, if not matched by a commensurate degree of institutional adaptation. Such change is especially necessary within the American military establishment, which repeatedly has shown itself better equipped—both psychologically and physically—to fight the last war than to fight the next one.

To those who seek from within to ready the American military to perform its myriad mission—Pentagon planners and decision makers—and, no less, to those who seek from without to change the institution—the so-called military reformers—the future should be a concern of fundamental importance. Just as our visions of the future influence, and perhaps even deter-

mine, the policies and programs of the present, so too do today's decisions affect the course of tomorrow. The leading question that begs our attention, therefore, is the following: What form will wars of the future take? In a more inclusive sense, what will be the overall nature of the conflict environment confronting the United States and its military establishment?

In framing this inquiry and attempting to answer it, the author accepts the premise that conflict in various forms is inevitable, although war as traditionally defined is not. Therefore, military planning and reform must be directed at accommodating a wide range of contingencies that fall outside the legalistic definitional bounds of warfare, per se. Of no less importance is the recognition that ostensibly discrete and isolated events have assumed an unprecedented degree of interrelatedness in today's world—moot tribute perhaps to Hegel's Axiom of Internal Relations.[1] Thus, the context within which planning and reform take place must go beyond purely military and international considerations and deal as well with things both nonmilitary (e.g., political and economic) and domestic. Finally, the year 2000 is considered here an appropriate forecasting time horizon—near enough to afford reasonable projections, yet far enough out to permit requisite policy and program planning.

Any undertaking of this nature, especially one constrained by printed-page limitations, must be accompanied by the acknowledgment that gauging the future accurately is inherently difficult. To begin with, the methodological state of the art is woefully inadequate for predictive purposes. Despite the pretentious claims of econometricians, operations researchers, and others of their persuasion, futurology qualifies as little more than pre-science—an order of thought more rigorous than the reading of animal entrails, to be sure, but only slightly more reassuring than astrological ruminations. The pseudoscientific approaches employed to date by various authorities have tended to provide shallow cover for underlying policy preferences, value premises, and assumptions. It is no linguistic fluke, therefore, that purists have preferred the semantic robustness of *forecasting* and even *strategic planning* to *prediction.* This tenuous claim to scientific legitimacy explains in large measure why the most popular and widely embraced descriptions of the future (namely, those of Herman Kahn and Alvin Toffler) tend to be based on intuitive speculation, in which the fertility of the author's imagination, rather than the method employed, is the criterion by which others judge the quality of the vision.

Similarly, there is a common tendency to treat the future as if it were merely an extension of the present and past. The validity of this approach remains as contentious today as it has been for centuries. For one thing, it is virtually impossible to identify all of the relevant historical variables surrounding a particular event or set of circumstances, much less to establish causation. Therefore, "historical literacy" may produce little more than self-delusion. For another thing, the more we *know* about something, the less we seem to *understand* it. Consequently, the accumulation of facts over time may breed a degree of entropy that makes reliance on chance, by comparison, a preferred course of action.

The decelerating effects of bureaucratic inertia, political conflict, and intellectual flaccidity constitute a third obstacle to describing the future with any certainty. However prescient a given prognosis may seem at the moment, the rate of realization rarely is as rapid as anticipated. Were it otherwise, we might expect to be living today under the dystopian conditions described in Orwell's *1984* or Huxley's *Brave New World,* about to enter into the era of world government envisioned by idealistic futurists, or engaged in one of the unthinkable nuclear conflagrations that the late Herman Kahn made so convincingly plausible. Moreover, it seems highly unlikely that these mitigating factors within the bureaucracy, the political sphere, and the intellectual community will

manifest themselves any less pervasively and effectively in the years ahead. Thus, one must seek consolation in the fact that what at first may seem but a frustrating impediment to progress actually may be a blessing in disguise.

What then are the intellectual scope and exploratory parameters of the "prognosis" presented here? Namely,

- to define a reasoned, plausible future that represents a synthesis of historical experience and emerging trends, while also incorporating selected speculations of a conservatively imaginative nature that fall somewhat outside the bounds of mainstream thought;
- to describe what the prospects for and the nature of conflict *will* be, rather than what they *should* be—thereby establishing the bounds within which planning and reform will be forced to operate, while conceding that certain features of the external environment will remain beyond the ability of particular policies and programs to influence;
- to present what Kahn would have called a surprise-free projection, by subordinating the less probable, exceptional occurrences that provide the most pronounced stimuli to change but also offer the least useful guidance for policy and program formulation; and
- for the most part, to avoid vague prescriptions based on "alternative futures," in favor of a more parsimonious definition of the future, which, in providing greater clarity and certitude, also runs a higher risk of proving wrong.

The Future Global Environment

Certain general features of tomorrow's international environment seem almost assured. The world itself promises to become a polycentric armed camp with frequently changing centers of power. The order and symmetry that ushered in the century will have metamorphosed into a cacophonous din of national and subnational voices, each clamoring for rights and perquisites unfettered by the burdens of responsibility to any higher order. Contributing to this state of affairs will be greatly accelerated rates of change, increasing levels of complexity and uncertainty, transient loyalties, and heightened demands for a more equitable distribution of global wealth and power. Collectively, these conditions will lower the threshold of crisis decision making so that previously routine matters will assume crisis proportions and thus necessitate greater responsiveness from governments and their supporting institutions (e.g., the military).

Beyond this level of generality, the future of conflict will be greatly influenced not only by purely military developments but by political, economic, technological, and demographic developments as well. The interactions of these developments will provide the stimuli for conflict and establish its parameters. Equally important will be those purely domestic developments that ultimately will dictate the nature and extent of U.S. response.

military developments

Militarily, there will be a continued scramble for advanced military technology, particularly among so-called developing nations. This demand will reflect the insatiable thirst of most emergent states for prestige and quick-fix modernization that is less painful and time-consuming than political and economic development. Although global arms purchases have leveled off and may even be on the decline, the factors that have contributed to this very recent trend are not likely to continue. First, the slowdown in petrodollars brought on by the current oil glut may well be superseded by new revenue-stimulating crises caused by other critical resource and commodity maldistributions around the globe. Second, Third World debt burdens, which have both resulted from and further inhibited arms purchases, may be disregarded by both arms buyers willing to sacrifice domestic investment and sellers whose yearning for influence rivals the buyers' eagerness for the weapons. Third, the market saturation that

purportedly has filled arsenals and sated weapons appetites is likely to be overcome by the eventual obsolescence of current weapons inventories, which will create new demand; by the pervasiveness of conflict, which, through combat attrition, will create other new demands; and by enhanced capacities for technological assimilation.

Accompanying this resurgence of arsenal building will be an expansion of military budgets and forces, most notably among developing countries that control critical resources. Similarly, the 49 percent of the world's developing states now under military rule will be joined (or replaced) in the years ahead by other states in search of instant power or unable to maintain internal social and political cohesion.

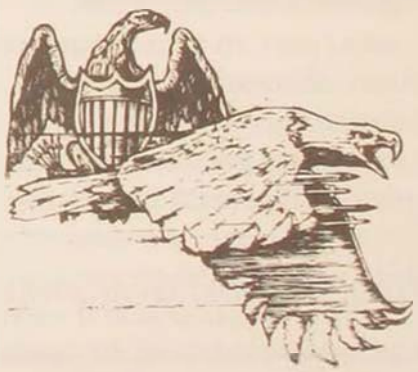
The spread of nuclear weapons also will continue unabated, with perhaps as many as thirty-one states possessing this capability by the turn of the century. A sizable number of these new possessor nations will be worrisome because of their propensities for conflict, their geographic vulnerability, or their potential for internal instability. While this troubling trend may increase the potential for nuclear blackmail by these incipient demipowers, the weight of historical evidence suggests that it actually may induce more responsible behavior.[2]

Finally, despite the current negotiating impasse, domestic and international pressures will lead almost certainly to a theater and/or strategic nuclear arms agreement between the United States and the Soviet Union. This step will give new hope and temporary self-congratulatory pause to antinuclear activists, while also sending a strong nonproliferation signal to the so-called have-not nations. On the other hand, given the fragmentation of the arms control process, there will be strong incentives for both superpowers to divert military spending into other areas of comparative military advantage (e.g., conventional force modernization and expansion), thereby fostering renewed doubt about the extent to which the risks of war actually have been reduced.

political developments

Future political developments will provide a particularly fertile breeding ground for conflict. A proliferation of new international actors —multinational enterprises, international agencies, and newly sovereign states—will contribute to the emergence of new power blocs built primarily around the possession of critical resources or short-term, shared security interests. Heightened nationalism in the developing world will be met by declining nationalism among the developed states.

The next fifteen years and beyond will be a period of floating coalitions in which bilateral relationships focused on specific issues predominate. Traditional alliance structures will weaken appreciably and in some cases disappear. The so-called nonaligned movement will grow in power, if not in stature. As it expands beyond its current membership of 101 nations, it will become more unwieldy, cumbersome, and strife-riven as a collective body, although its visibility and the stridency of selected individual members will provide a rallying point and constraining counterweight to great power intervention and exploitation.



NATO will remain an operating alliance in name and appearance only. Rather than openly fracturing, it will gradually drift apart as member nations increasingly pursue narrow national interests and diverge on fundamental economic, political, and military principles. As the Europeans continue to look inward and the center of gravity of U.S. foreign policy

shifts toward the Pacific Basin, the trends of recent years will magnify.[3]

A related development will be the continued weakening and eventual substantive dismantling of the United Nations. Although, as with NATO, the structure will remain, its legitimacy as a unifying body for nations to seek common global objectives and its influence in resolving international problems, which may have been vested in the organization during some periods in the past, will diminish significantly.[4]

Floating coalitions and crumbling international organizations will be merely the most civilized manifestations of a deeper underlying discontent among the poor, unempowered, and disenfranchised of the world. The plethoric crises of unfulfilled expectations that result will produce an increasingly widespread ideological disaffection among the masses and, in response, intensified authoritarian and totalitarian repression by ruling elites. Political dogma that once coalesced both revolutionary and reactionary fervor will give way to a near-universal utilitarian morality, bred of cynicism but tempered by hope, the colloquial verbalization of which will be, "what works, works." Juxtaposed against this ethic will be concentrated pockets of religious extremism—especially in the Moslem world—involving zealous minorities that practice a refined form of exploitative mob psychology.

economic developments

If ever there were an iron law of international relations, it is that economic vitality and strategic success go hand in hand. The course of the future will be so much a function of this tenet that defense planners will rue the day they neglected the strategic ramifications of the international marketplace. The title of a recent book—*The Real World War: The Coming Battle for the New Global Economy and Why We Are in Danger of Losing*—captures the essence of the situation facing the United States. Authors Hunter Lewis and Donald Allison note:

> If there is a single great fact of our era, it is not the continuing rivalry between Russia and the West. Instead, it is the emergence of the first truly international industrial marketplace and the struggle between the leading trading nations and blocs—the United States, Western Europe, Japan, Singapore-Taiwan-Hong Kong-Korea, Mexico-Brazil, and, potentially, China—to control this new global economy.[5]

The years ahead will produce the full maturation of this global economy and the attendant manifestations of financial, industrial, resource, and trade interdependence. As never before, the health of the U.S. domestic economy and the turbulent international economy will be inextricably intertwined—a circumstance that will be most startlingly clear in the relationship of the U.S. budget deficit to international exchange rates, trade and Third World debt—any and all of which could precipitate major crises.[6]

Given the character of the American political system, it is unlikely that the budget deficit will diminish appreciably, if at all.[7] Furthermore, increased competition for global markets, continued reliance on overseas resources and commodities, and the further obsolescence of key industrial sectors will contribute to severe trade imbalances for the United States and for other nations as well. The near-term solution for many nations will be expanded protectionist measures that easily could lead to a new wave of trade wars, even involving the physical interdiction of goods and traffic. Such possibilities signal a radical departure from the long-held idealistic notion that commerce is the handmaiden of peace. As argued by one proponent of a neomercantilist strategy: "International trade is not harmonious. It is competitive, and the stakes are very high. . . . Interdependence leads to intervention."[8]

Equally alarming is the looming threat of debt crises and defaults. Generally speaking, the year 2000 will signal little change in the distribution of global wealth: less-developed countries will hold 80 percent of world population but probably no more than 24 percent of

world GNP. Large-scale borrowing will remain the shortcut to temporary pecuniary satisfaction. But the inability or unwillingness of even a few debtor nations to repay loans could produce trauma in the world financial system leading to domestic retrenchment and, possibly, to pressures from the U.S. banking community for the physical seizure of foreign assets.

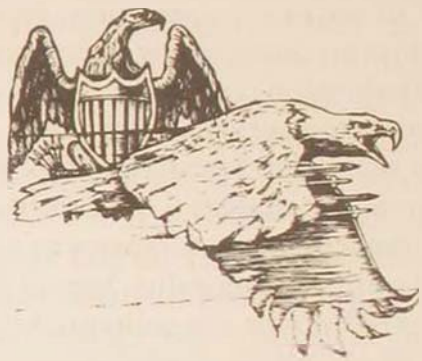
Much of what happens in the world economy will depend on whether or not another energy crisis occurs. The prospects for such an occurrence are considerable, and the consequences are likely to be more debilitating than in the past, due to the increased share of GNP now devoted by Western economies to energy expenditures.[9] Similar potential exists for a critical materials crisis, given the continuing dependency of the United States and its allies on foreign sources of supply. A seedbed of crisis potential rests in the vulnerability of key land and sea lines of resource flow to disruption by even minor threats.

technological developments

Technology will carry most of our brightest hopes and darkest fears for the future. Properly developed and used, it will provide an effective antidote to greed, hate, ignorance, and xenophobia. Improperly developed and used, it will merely accentuate such tendencies.

Absent rigorous criteria based on necessity and sufficiency, the centrifugal tendencies of technological momentum will intensify the incessant quest of all military establishments for increased speed, range, accuracy, lethality, reliability, endurance, and survivability of the instruments of war. Thus, weapon system costs and the self-perpetuating dynamics of international arms competition will continue to escalate.

The most discernible advances in military technology between now and the end of the century will be in the areas of computerization, telecommunications, surveillance and target acquisition (the search for global transparency), stealth technology (the countervailing search for global opaqueness), navigation and guidance (including the leap from smart to brilliant weapons), and transportation. Worldwide satellite communications will both improve the chances of overcoming social and cultural barriers and afford vast propaganda potential. Teleconferencing will enhance the potential for face-to-face dialogue with wayward allies and resolute adversaries alike. Dramatic medical advances in preventive treatment, diagnostics, and catastrophic surgery will compensate, to some extent, for the increased lethality and destructiveness of modern weaponry.



Some of the most dramatic impacts on military operations will come from emerging technologies that will not be fully operational until the twenty-first century. These include artificial intelligence (and its progeny, expert systems), bionics/cyborgization, genetic engineering, parapsychology, robotics, weather modification, and "natural" disaster manipulation. Such exotic technologies could change not only the face of traditional combat but also the very nature of power relations among nations. At the most plausible, attainable level are those developments that range from fully automated tanks and aircraft to super computers that evaluate options and make nuclear attack and retaliation decisions. Somewhat further removed are those advances in bionics and genetic engineering that eventually could result in the replacement of humans in combat by indestructible humanoid clones. At the most esoteric ex-

treme, full exploitation of psychic phenomena could lead to the human ability to read enemy documents from a distance, track and predict enemy locations and movements, cause the instant death of adversaries, mold the thoughts of enemy leaders, or even disable enemy weapons and equipment. For the foreseeable future, such advances seem hardly likely to overcome the stigmatic embrace of what has come to be called the "giggle factor."

demographic developments

Emerging demographic conditions will figure significantly as both precipitant and constraint in the future of conflict. There will be an unprecedented surge in global population, particularly in the Third World where 92 percent of the 1.5 billion increase between now and the year 2000 will occur. Significant increases in urban crowding will lead to heightened tensions and a greater likelihood of urban violence.

There will be an acceleration of migration patterns from east to west and from south to north, with legal and illegal immigration into the United States alone expected to reach at least 450,000 annually. The resultant increases in ethnic diversity and intermixture will lead to improved cross-cultural understanding but also may contribute to political destabilization, especially in those recipient nations where individual liberties are less sanctified and class boundaries more pronounced than in the United States.

Minorities will come to constitute ever larger percentages of the American population. The effects of this will range from the altered racial composition of the U.S. Armed Forces—and all that portends for civic consciousness, social equity, and military effectiveness—to the more volatile possibility of ethnic factionalism in the country. There will be increased potential for another Mariel boatlift-like "dumping" of culturally unassimilable aliens onto American shores by Castro and other like-minded despots, as well as greater likelihood of an upsurge in domestic violence involving ethnic concentrations with links to terrorism (e.g., Puerto Ricans and Armenians). Such ethnic factionalism may artificially impede or accelerate U.S. interventionist tendencies, especially within the Western Hemisphere. (It is interesting to speculate, for instance, what different effects the sizable Mexican-American and Cuban-American populations in this country might have on U.S. decisions to intervene in Mexico and Cuba respectively.)

Western populations, on the whole, will age appreciably, while age distributions in the Third World will remain relatively unchanged.[10] Because these trends will affect the size and composition of the military forces fielded by individual states, they will have significant implications for the future of conflict, particularly insofar as they influence the abilities of advanced and developing nations respectively to wage various forms of manpower-intensive, low-intensity conflict.

Both NATO and the Warsaw Pact will experience a declining pool of young military manpower (seventeen to thirty years of age).[11] For NATO, this decrease could portend, among other things, greater use of women and civilians in both traditional and nontraditional military roles. For the Warsaw Pact, it will affect the composition of Soviet armed forces (up to 30 percent of Soviet military personnel will come from the Central Asian and Moslem populations by 1999) and may influence the degree to which the Soviets will need to rely on their allies.

domestic developments

Domestically, much of what happens will depend on the prevailing public values and attitudes of the moment. Although recent trends suggest greater public confidence in public institutions, renewed patriotism, and a tempering of the narcissistic orientation of the 1970s, these attributes are hardly immutable, enduring features of the contemporary American

character. Assuming that crisis decision making will be the future norm, that government will show itself increasingly incapable of handling crises, and that the United States will be confronted by a rash of highly ambiguous international situations in which interests and objectives are equally vague, the following conditions seem likely:

- Continued skepticism toward governing institutions and national leaders.
- Less ethnocentrism, leading to greater acceptance of ethnic and cultural differences and perhaps to decreased patriotism (relative to that of earlier generations).
- Declining acceptance of the utility of military force, yet increasing concern about the powerlessness of the United States, particularly in the face of "pygmy tyrants."
- Continued individual narcissism, simultaneously producing less willingness to sacrifice for collective goals, yet more thirst for adventuristic self-gratification. (This will reflect a pragmatic reassertion of individual over collective rights, rather than a form of untethered hedonism.)
- Pronounced levels of alienation, anomie, and cynicism, leading to a largely unfulfilled search for moral anchoring.
- The final demise of the hero in American culture and with it the further diminution of the military as a source of societal role models.
- Heightened emphasis on credentialism and the success ethic, thus continuing the trend in favor of vicarious experience rather than lived experience as a primary basis for public policy.[12]

Accompanying these characteristics will be a continued loss of U.S. prestige in the international arena. Collectively, these factors will feed the emergence of more (and more vocal) single-interest constituencies intent on asserting themselves and gaining publicity under the guise of "restoring the nation to greatness." Increased public scrutiny of defense will lead to justifiable demands for the rationalization of defense organization and spending, while further confounding policy and strategy.

Congress will expand its involvement in the formulation and conduct of foreign and defense policy; the military establishment will become increasingly politicized and civilianized; and there will be a further usurpation of military advice by academic strategists. One of the most identifiable results of all these shifts will be a reinforcement of the pronounced centrist tendency that has manifested itself in all recent presidential administrations.[13]

Recent events foreshadow the almost certain election of a woman or minority president by the end of the century. The election of a woman may well lead to hostile testing of U.S. resolve, which, in turn, could prompt a female president to take extraordinary measures to demonstrate her toughness. The election of a minority president could have any of a number of important consequences, depending on the personality of the electee. These might include changes in traditional alliance structures, in relations with the Third World, and even in the acceptable racial composition of the U.S. Armed Forces.

DEPENDING on precisely how these various development concatenate, the future may follow any of a number of paths. The actual course taken will depend on a number of factors, including the number of independent actors on the world stage; the nature of the resultant interactions (i.e., cooperation born of interdepencence versus competition born of dependence or coercion); the degree of integration or assimilation; the existence or nonexistence of universally accepted standards of behavior, as reflected in world opinion, treaty ratification, etc.; and the occurrence or nonoccurrence of catalytic crises that precipitate chain reactions. Nevertheless, the likelihood of various future courses and outcomes seems clear, based on current circumstances and past history.

The most likely path of the future will be a gradual drift toward global anarchy that will

not reach its zenith until the post-2000 period. This will reflect a continuous, though not drastic, accentuation of the condition of disequilibrium that existed at the start of the Reagan administration.

The next most likely path will be more pronounced shift toward global anarchy precipitated by a confluence of unexpected events and conditions. This will culminate, by the year 2000, in a condition of general global chaos and disorder that existing governing structures and processes will be ill-equipped to handle.

A dynamic equilibrium (balance of power) situation created by the natural checks and balances of the international system is a third possible course for the future. Historical precedent would accord a higher probability to this alternative. However, there is mounting evidence that such inherent systemic stabilizing features as presently exist will obsolesce rapidly in the face of accelerating rates of change. Absent appropriate adaptations, the "muddling through" that has characterized most global interactions to date seems unlikely to keep anarchic tendencies within tolerable limits.

A fourth, and even less likely, occurrence would be the imposition of a world empire by one or more of the major powers in the aftermath of a precipitous shift toward global anarchy. There seems little prospect that circumstances would deteriorate so drastically or that authority could be imposed so extensively as to make this a plausible scenario.

The least likely future path for mankind is that leading to a world community or world government that results from the voluntary association, or compliance, of all or most of the world's independent actors. Such willing devolution of power is, and will remain for the foreseeable future, totally out of character with the behavior of most established nation-states, large and small.[14]

An Array of Threats

Arrayed against these environmental developments will be a profusion of potential threats to the United States, each possessing its own distinguishable characteristics and capabilities. The importance of identifying these threats is captured by the words of Princeton University's Klaus Knorr: "Threat perception is not only concerned with whether or not a threat exists, but also with its character, especially the quality and magnitude of the implied peril."[15]

Ideally, a country or force constitutes a threat only to the extent that it threatens specific interests and objectives. Realistically, however, the vagueness of most interests and objectives, the practical difficulties of establishing priorities among them, the unpredictability of the growing environment, and the need for a measure of continuity in planning combine to make it more appropriate to define threats in terms of the extent to which they hold fundamentally incompatible values and/or pursue a *range* of incompatible interests and objectives vis-à-vis the United States.

Judged against these criteria, a number of prospective threats present themselves. For planning purposes, these threats can be ordered on the basis of two considerations: the threat's overall power potential (i.e., the size and capability of its military establishment, its access to sustaining resources, and the strength of its economic and social infrastructure) and the perceived probability that crises involving the threat will occur.

For the time being, the Soviet Union and the People's Republic of China will remain the only first-order threats confronting the United States.[16] On the whole, the Soviets will be guided by the same foreign policy goals that have energized their conduct in recent years: avoiding direct military confrontation with the United States; promoting control and consolidation of Eastern Europe; benefiting from scientific, technological, and economic intercourse with the West; forestalling "encirclement" by Japan, China, and the developed West; improving relations with the European members of NATO; simultaneously pursuing arms control and arms buildup; and exploiting

Third World political crises and power vacuums without incurring undue costs or risks.[17]

The Soviets will continue to reserve their most aggressive behavior for the peripheral areas of the world, where they will expand the use of arms sales, proxies, and advisers. Relations with the West will be characterized by the concurrent pursuit of competition and détente. They will assiduously avoid direct confrontation, seeking accommodation and conciliation where it is to their advantage, while also engaging in the frequent use of active measures (disinformation, forgery, press manipulation, agents of influence, and, under carefully orchestrated conditions, assassination and kidnapping as well).

Other developments of note will include the following:

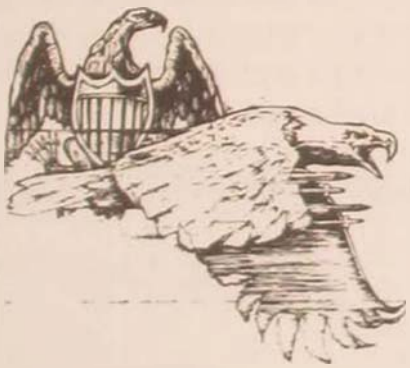
- With Konstantin Chernenko's passing, a power struggle may develop, particularly if successor Mikhail Gorbachev's policies do not coincide with those of more conservative members of the Politburo or the military. This could cause temporary fits and starts, but no fundamental change, in U.S.-Soviet relations.
- Expansion and modernization of Soviet military forces will continue (even if at marginally reduced rates). Although the resultant deprivation of various domestic sectors will attest to the further deterioration of the Soviet economy, this will have little appreciable effect on the resilience of the ruling regime or the larger society.
- Soviet involvement in Afghanistan may well last until the end of the century, although without severe political or military repercussions.
- Finally, the cohesion of the Warsaw Pact alliance will be weakened materially by growing disenchantment of bloc members with Soviet leadership and forced economic interdependence, by improved ties between East and West Germany, by the emergence of various independent movements (including peace groups) throughout Eastern Europe, and by other circumstances. While sorely testing Soviet insecurity, this growing divergence within the alliance is likely to be met by political repression rather than by military intervention.

China will achieve increased stature beyond that already ascribed to it by one sinologist: "For the first time in over 100 years, China stands squarely on the world state as an emergent international power. . . . [This] has irrevocably altered the world power equation."[18] The country's concerted commitment to achieve modernization will be exceeded only by its obsession with reunification of the mainland with Taiwan, Hong Kong, and Macao. Although current plans call for military modernization ostensibly to take a back seat to agricultural, industrial, and scientific and technological modernization, the ultimate effect of any modernization will be to increase overall power potential, thereby making the P.R.C. a force to reckon with throughout Asia.

The U.S. desire to cement high-technology commercial ties with the P.R.C. as a means of leveraging the U.S.S.R. is more likely to play into China's hands than to achieve its intended result. Possessed of the world's largest force under arms and, thanks to geographically circumscribed strategic objectives, possessed as well of superior interior lines, the P.R.C. can afford a patient military modernization effort. By continuing to play the United States and the Soviet Union off against each other, it will buy itself time until the late 1990s when, with the cessation of British rule in Hong Kong, it will be in a much stronger position—militarily, economically, and politically—to attempt to regain its other lost territories (most notably Taiwan). Depending on the course of U.S.-P.R.C. relations, the coming decade may bear witness to what previously would have been impossible: an exchange of overtures, and perhaps the initiation of a more formal relationship, between Taiwan and the Soviet Union.

Second-order threats will come in a variety of forms. First will be those states with incipient nuclear capabilities whose behavior is sufficiently unstable or provocative as to make the use or threatened use of nuclear weapons for

purposes of intimidation or coercion a distinct possibility. These states include India, Pakistan, Argentina, Iran, Iraq, Libya, and possibly even South Africa. Second will be those states with inordinately large and active military establishments whose behavior toward the United States and its allies is demonstrably hostile and likely to continue to be so. These include Cuba, North Korea, Syria, and Vietnam. Third will be those newly industrialized countries whose newfound economic prowess, competitive trade position, or possession of vital resources could produce acute economic tensions that might spill over into military confrontation. This group of states includes Brazil, Mexico, Chile, and, depending on extant circumstances, Taiwan. Fourth will be "stable" allies in whose countries the United States maintains key military facilities that could become increasingly vulnerable to persistent political unrest. These allies include Greece, Turkey, the Philippines, and Spain.



Third-order threats will warrant relatively less concern and preparation but should receive at least a modicum of attention. These will include not only the remainder of the Third World—where variegated forms of interstate and intrastate conflicts can erupt almost instantaneously—but also nonstate actors with newly possessed military capabilities (e.g., private armies sponsored by multinational corporations). Most important, however, third-order threats may include any of a number of current U.S. "allies" who, by virtue of their established positions of independence vis-à-vis the United States, could act unilaterally in a manner that is deleterious, and even hostile, to vital American interests. France, Japan, Israel, and Saudi Arabia fall into this category.

In the final analysis, any attempt to identify the entire range of possible threats to U.S. security, however desirable, is doomed to futility. It would be just as logical, for example, to include in the list of possible threats the likes of Nicaragua, Angola, Laos, the Yemens, or any number of other states. Transient allegiances and the floating nature of coalitions will produce numerous changes in friends and adversaries between now and the year 2000. Ultimately, leadership succession will determine who is friend and who is foe, especially where charismatic leaders are involved; who can say with any confidence what will happen when Castro, Khomeini, Qaddafi, Marcos, and King Hussein pass from the scene? Moreover, even where shared technology or doctrine produces similarities among threats, unique social, cultural, and historical factors will dictate that each threat be dealt with on its own terms.

The Nature of Conflict

The exact course of the future will be neither totally determinate nor indeterminate. Much will depend on how the United States responds to evolving circumstances and whether or not these responses are anticipative or reactive. On the other hand, much of what happens will be more or less independent of U.S. action or inaction. The peculiar interactions of seemingly unrelated events may sometimes assume the random characteristics of colliding subatomic particles. And other state and nonstate actors, sometimes in pursuit of their perceived self-interest, sometimes accidentally, will do things that defy American influence. For example, can it be said with any certainty that even drastic (and largely unpalatable) measures by the United States could influence the idiosyncratic behavior of a Khomeini or a Qaddafi? Or can we predict confidently that the Soviet economy

will be responsive to external market forces?

Nonetheless, the confluence of particular threats and environmental conditions will create situations that contain the seeds of conflict. The extent and manner of involvement of various actors will dictate both the form and intensity of the conflicts that emerge. Figure 1 provides a framework for identifying the general dimensions of conflict as a function of the actors involved.

Situations involving two or more first-order powers promise to be global in potential scope—high-intensity conflagrations that could involve theater and/or strategic nuclear exchanges.[19] Not only is the number of such possibilities small to begin with, but the magnitude of associated costs and risks is so high that confrontations at this level will be repressed and supplanted by less direct, less provocative forms of competition. Direct confrontation between any two elements of the so-called big-power triangle—the United States, the Soviet Union, and the People's Republic of China—will remain a remote possibility, not because of any rapprochement (such as some have seen emerging from the ephemeral warming of Chinese attidudes toward both the United States and the Soviet Union), but because of a mutual recognition by all parties that any such conflict could result only in a level of devastation that would leave the uninvolved member of the triangle at a distinct strategic advantage.[20] Thus, the relationship will continue to be characterized by fluctuating periods of wary antagonism and manipulative seduction. Only marginally more likely will be a conflict between the Soviet Union and Japan. Even if relations between the United States and Japan were to deteriorate markedly, innate Soviet caution would mitigate the temptation to undertake anything more aggressive than the threats and intimidation in which the Soviets now engage.

Situations involving first-order and second-order powers or, more likely, two or more second-order powers probably will be mid- to high-intensity affairs involving advanced mili-

Figure 1. Dimensions of Future Conflict

	global	local/regional		internal
threat	first order	second order	third order	low intensity subconventional
first order	• high intensity • theater/strategic nuclear	• high/mid intensity • conventional/theater nuclear	• mid/low intensity • conventional/ subconventional	
second order		• high/mid intensity • conventional/theater nuclear	• mid/low intensity • conventional/ subconventional	
third order			• low intensity • conventional/ subconventional	

tary technology but containable within local or regional bounds. In the former instances, it is highly improbable that the Soviets will risk engaging a strong second-order power possessing modern technology unless an accidental, catalytic situation draws them in. In contrast, the P.R.C. could be involved in any number of conflicts with Vietnam, India, Taiwan, or even Hong Kong. To the extent that the Chinese succeed in lulling the United States into a false sense of calm, due to the atmosphere of bilateral cordiality that is emerging, U.S. leaders will be neutralized by their own sense of contradiction over such seemingly inscrutable behavior.

Considerably more likely to occur will be situations involving third-order powers. Such situations will be mid- to low-intensity affairs at the conventional and subconventional levels. Because of the large number of third-order powers in the world, as well as the wide array of interactions possible at this level, this genre of conflict will remain extremely prevalent—continuing a trend that has been in evidence throughout the post-World War II era.

Finally, internal conflicts will constitute the most pervasive and prevalent form of conflict, due to the ease with which such affairs can be initiated, their containability and immense variety of forms, and the fact that their conduct does not depend on a large sustaining resource base.

For the most part, there will be no identifiable geographical pattern to these conflicts that would allow the United States to focus its responses. Outside of Europe, which maintains a degree of uniqueness because of the array of military forces deployed there, the propensities for conflict will be distributed across Asia, Africa, Latin America, and the Middle East. Considering that America's vital interests, though differing in content, command more or less equivalent priority in each of these regions, there will be a confounding of the already intractable policy dilemma of how best to correlate U.S. capabilities and commitments. As a result, conflicts will, of necessity, continue to be dealt with on a case-by-case basis as they occur.

Beyond these basic conflict patterns, it is instructive to look at the specific types or levels of conflict that will emerge in terms of their *probability of occurrence* and their *criticality* (i.e., the associated social, psychological, political, military, and economic costs and benefits).

A well-recognized problem confronting military planners is whether preparedness should be a function primarily of the prevalence or the potential impact of a particular type of conflict. One respected authority who has acknowledged the problem is former Under Secretary of Defense Robert W. Komer, who reflects the propensity of most planners today:

> The more likely contingencies are in the volatile Third World, . . . but it is risky to fall prey to this "likelihood fallacy." By the same token, nuclear conflict is the least likely contingency of all; should we therefore not bother to maintain strong nuclear deterrent capabilities? Just because the likelihood of direct threats to our most vital interests is relatively low is no reason for not continuing to invest heavily in keeping them low.[21]

A comparison between current levels of U.S. preparedness and the expected nature of future conflict (Figure 2) highlights some startling asymmetries in this regard that could have telling consequences.

strategic nuclear conflict

Strategic nuclear conflict is highly unlikely to occur before the end of the century, notwithstanding the protestations of nuclear freeze advocates and others. On the whole, Americans have continued, throughout the postwar period, to subscribe to the belief that nuclear war will not occur, although the size of the majority having that opinion has dwindled in recent years.[22] Public opinion on this issue derives largely from understandable emotional factors that tend to obscure rational assessment. Leading British military historian Professor Michael Howard has offered the following contrasting judgment:

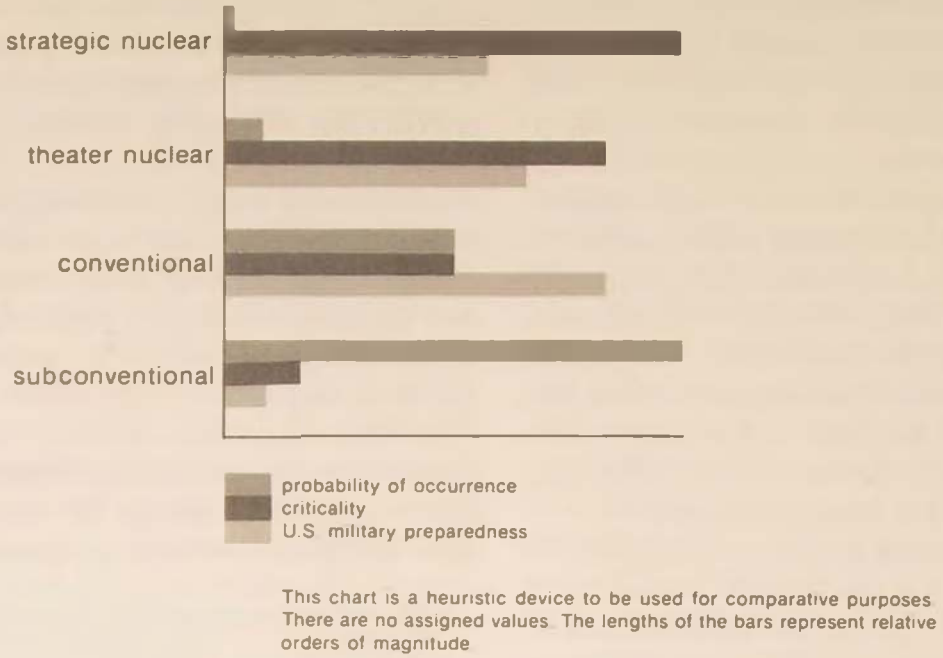


Figure 2. Spectrum of Conflict•

> I think that the development of nuclear weapons has given us a chance for the indefinite future of preventing the outbreak of major war, at least between powers armed with nuclear forces. One can't say, of course, that it will never happen. But I think that the possibilities of major war are far more remote as a result of the existence of nuclear weapons than they ever were in the past.[23]

Unquestionably, because of the social, psychological, and economic costs involved, strategic nuclear warfare is the most critical level of conflict. The near-universal agreement that exists on this point has produced a necessary degree of caution and safeguards by those who possess nuclear weapons, so that the probabilities that such conflict will occur have been effectively mitigated. As Harlan Cleveland has noted: "The U.S.-USSR strategic standoff . . . is paradoxically the most stable element in world politics."[24]

Relative to the probability that strategic nuclear conflict will occur, the United States is overprepared, although relative to the criticality of the phenomenon, overpreparedness is a meaningless term. It is difficult to support the argument, however, that greater preparedness would make conflict at this level any less likely or, conversely, that a marginal degradation would materially increase its likelihood.

theater nuclear conflict

Conflict is only slightly more likely at the theater nuclear level, especially if one thinks primarily in terms of a NATO-Warsaw Pact crisis in Europe. However, the spread of nuclear weapons and the prospects for mid- to high-intensity interstate conflicts in other parts of the world create numerous possibilities elsewhere. Little has happened to change so-called expert opinion since a group of eminent scholars convened in late 1975 to address the question, "Nuclear War by 1999?" During the course of that discussion, George Rathjens of MIT speculated that

> . . . if there is to be nuclear war, it will begin with one of the emerging nuclear powers, where command and control systems may not be as refined or the government as stable, as ours. . . . My guess is that the first one will be relatively lim-

ited, begun by a country with a fairly small population using nuclear weapons probably against its neighbors.[25]

Similarly, this level of conflict is only slightly less critical than strategic nuclear conflict. The essence of the debate, of course, revolves around the question of whether a theater nuclear engagement can be contained and limited. The most convincing logic suggests that the first use of nuclear weapons *outside the European theater* (by far, the most plausible scenario) would be such a significant precedent that it would mobilize counteraction sufficiently strong (e.g., the United States and the Soviet Union acting in temporary concert) to ensure containment.

Here, too, the United States is overprepared relative to the probability of occurrence. The greater U.S. preparedness at this level than at the strategic nuclear level is attributable to the considerable overlap that exists between forces, weapons, and doctrine having dual conventional-theater nuclear uses.

conventional conflict

Conventional conflict is significantly more likely to occur than nuclear conflict, not only because of the amount of conventional armaments around the globe but also because it is the traditional form of warfare. The pervasiveness of conventional conflict reflects the growing size and sophistication of military forces possessed by second- and third-order powers with a demonstrated propensity for interstate conflict.

At this level, criticality and probability of occurrence first come into balance. The psychological "firebreak" that separates conventional from nuclear conflict—to say nothing of the ultimate destructive potential of the latter—produces a measurable decrease in criticality. Others argue, however, that this distinction has dimmed considerably. British military historian John Keegan, for one, notes:

> What is not generally perceived is how much the effects of conventional war now overlap with those of nuclear war. A high-intensity conventional war and a low-intensity nuclear war might inflict very much the same level of damage on any given piece of inhabited landscape.[26]

Nonetheless, the tacit recognition by most authorities that the use of even one nuclear weapon would be an act of extraordinary psychological dimensions reinforces the already ingrained bureaucratic propensity to prepare for the war we want rather than for the one we will get. The preponderance of U.S. forces and weapons, therefore, are conventional. It is the only level of conflict for which we have a fully codified and viable (albeit controversial) doctrine. In short, the United States is very much overprepared for conventional conflict. Those who argue otherwise (including proponents of the "no-first-use" nuclear policy) assume a NATO-Warsaw Pact confrontation—a low-likelihood contingency for which our principal objective is to deter rather than to fight. Our experience to date in this regard has been a successful one, from which the future is unlikely to deviate.[27]

subconventional conflict

This level of conflict—which includes everything from shows of force to insurgencies to terrorism—is by far the most likely to occur, for it is within this domain that the relatively weak can test, and attempt to gain concessions from, the strong.

Shows of force will continue to be a major, low-risk option for demonstrating power, especially by the first-order powers. Such tacit threat-making, having become a fully institutionalized instrument of power politics in the nuclear era, will be even more prevalent in the future than in the past.

Insurgency will remain the principal vehicle for growing revolutionary movements, particularly those with the patience to endure a protracted struggle. Whatever may be the actual motives that animate individual insurgent

movements, the continued existence of unpopular regimes in politically unstable and economically maldeveloped societies will provide a necessary pretext for the sustainment of such conflicts.

Terrorism will stand alone as the predominant form of conflict over the next two decades. The accelerating trends of recent years do not begin to capture the magnitude of what lies ahead; if anything, these trends have merely provided a sharp stimulus to more frequent and more violent acts of terrorism. The growing appeal of this "warfare on the cheap" is its high return on investment, for invariably the impact of most terrorist acts is disproportionate to the effort required by their militarily insignificant perpetrators. Lebanon in 1983, where only four individual terrorists killed 349 "infidels" (including 264 Americans), is a startling case in point.

Generally speaking, terrorism of the future will be characterized by four major attributes:

- It will be increasingly violent and concentrated against human targets. American diplomats, businessmen, and military personnel stationed overseas will be especially vulnerable.
- It will be directed more against Americans and become more prevalent within the United States. In the words of journalist Claire Sterling: "I am sure that the United States will, as always, be the principal target of terrorism, because it is the most powerful country in the Western world. And that is the one, in the end, that they're all after."
- It will come increasingly under state sponsorship, thereby lending credence to the observation of DePaul University Professor M. Cherif Bassiouni: "The battleground between superpowers has shifted from major military confrontations to low-level violence strategies."[28]
- Largely as a function of the access to resources provided by state sponsorship, the first bona fide instance of terrorism involving the use, or threatened use, of weapons of mass destruction (nuclear, chemical, or biological) will occur.

Two factors in particular will hamper efforts to deal effectively with terrorism. The first will the sheer number of terrorist groups to be identified, monitored, and countered—a much more formidable task than dealing with formal states and their traditional military establishments. The hundreds of guerrilla and terrorist groups involved in thousands of acts of violence in the last two decades alone portend a dramatic rise in the number of parties willing to resort to such violence to achieve their ends.

A second inhibiting factor will be the growing fanaticism of many groups, thus making it less likely that traditional sanctions will have the desired effects. Typical is the rhetoric of one radical Moslem leader: "We are willing to be killed in the name of God and in defense of our country and of our dignity."

Finally, the link that has emerged between illicit drug traffic and terrorism will be strengthened. This dangerous trend holds two major implications. For one thing, the methods, routes, and support infrastructure for terrorism and drug trafficking will become increasingly congruent, thereby producing a degree of coordinated efficiency that will demand equally well-coordinated countermeasures. On a more ominous note, illegal drugs seem likely to assume more significance as a mainstream weapon of terrorism, especially where political upheaval and social disintegration are sought. There is a great danger that others will follow in Castro's recent footsteps by encouraging the smuggling of drugs into the United States to "create mayhem" and to raise funds for revolutionary movements.[29]

Judged only on the basis of individual incidents, subconventional conflict is appreciably less critical than other levels of conflict; however, in their totality, given a degree of orchestration by hostile powers, such incidents may have an utterly debilitating effect on the U.S. strategic posture. It is the cumulative effect of extraordinarily large numbers of incidents over time that produces a degree of comparative hypercriticality.

It is no secret that the United State is woefully ill-prepared to wage subconventional conflict effectively. While we have a clear measure of proficiency in the use of shows of force, two factors—the widespread availability of the most sophisticated military technologies, and the "fishbowl effects" of media saturation—have produced a vulnerability that has virtually negated the efficacy of gunboat diplomacy. Our failed experience in Vietnam was irrefutable proof of our lack of affinity for insurgency or counterinsurgency, and the American military's subsequent disregard of the lessons of that conflict has only reinforced this much-neglected operational dimension. Similarly, in the counterterrorism arena, recent events have demonstrated rather conclusively a less-than-impressive capability. The finding of the Long Commission, appointed by Secretary of Defense Caspar Weinberger to investigate the October 1983 terrorist truck bomb attack that claimed the lives of 241 U.S. Marines at Beirut airport, is a telling indictment:

> The United States, and specifically the Department of Defense, is inadequately prepared to deal with this threat. Much needs to be done, on an urgent basis, to prepare U.S. military forces to defend against and counter terrorist warfare.[30]

conflict in space

Space will be the strategic arena of the twenty-first century, at least for the advanced industrial nations, for whom it will represent a welcome respite from the nettlesome frustrations of terrorism. Despite the surfeit of publicity generated over the Reagan administration's so-called Star Wars initiative and the early rush by both the United States and the Soviet Union to fill the phantom "ASAT (antisatellite) gap," sufficient technological capabilities will not be fielded in time for space to be an identifiable theater of conflict before the end of the century.

In the near term, therefore, the emphasis will be on the attainment of marginal ASAT advantages, the intent and the effect being to hinder satellite reconnaissance, early warning, and navigation capabilities, particularly as they contribute to the nuclear balance. The first quarter of the twenty-first century will produce beam-energy weapons, which, if properly employed *and publicized*, will be perceived as rendering nuclear weapons obsolete over time. In the longer term, we shall witness fuller exploitation of space: lunar (and perhaps other planetary) development, the eventual emplacement of permanent space colonies, and true Star Wars technologies such as ultrapowerful directed-energy weapons that can destroy targets at distances of thousands of miles, hypersonic aircraft, and even gravity-collapser beams that can turn entire cities into black holes.

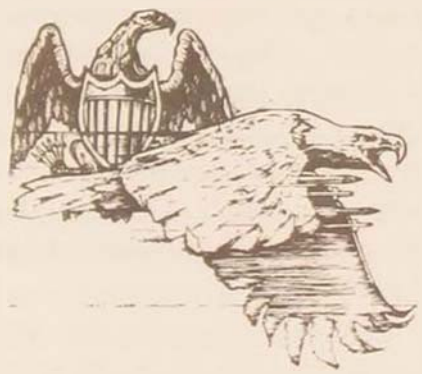
For the Soviets, space will provide the ideal arena for exercising their propensity for strategic indirection. For the United States, it will provide a pristine "battlefield" far removed from the inhibiting collateral effects that produce significant sociopolitical repercussions in traditional warfare. The virtual elimination of the human element from this type of conflict will make space a highly desirable—and thus prevalent—arena for exercising power and resolving disputes on earth. The result will be a futuristic reversion to the gladiatorial duals of the distant past.

Implications for Military Reform

The future offers both difficulties and challenges for the United States. Clearly conflict, in all its guises and colorations, is here to stay—at least for the foreseeable future. We are a long way, in fact, from achieving what Kenneth Boulding has called a "stable peace." But the situation is far from hopeless, nor is it beyond influence. We might take succor from the aplomb (or at least the rhetoric) of French General Ferdinand Foch, in a September 1914 message to Marshal Joseph Joffre during the first of the battles of the Marne: "Hard pressed on

my right. My center is yielding. Impossible to maneuver. Situation excellent. I am attacking."

The implications of such a future for military reform—and, more generally, for reform of the larger national security establishment—are many. At the most fundamental level, we must undertake a serious reevaluation of some of our most cherished values to determine how appropriate they are in the face of emerging global conditions and threats. For example, are our traditional attitudes toward growth, plenty, and even stability relevant to a future of increasing global interdependence that arguably may turn out to be the era of limits that some have feared? Even more difficult is the question of whether our attitudes toward sacrifice, the value of human life, and civil liberties equip us to deal effectively with the horrors of terrorism. Are our only choices either to turn the other cheek in moral rectitude or to turn the country into a police state?



No less important is the need to consider certain adjustments in our overall strategic orientation. We must make more sophisticated use of the many elements of power at our disposal (diplomatic, economic, and even moral) to support and complement the application of military force, acknowledging the utility of force under particular circumstances but recognizing that power often can be employed effectively without resort to force. We must be more sensitive to the dynamics of deterrence, particularly as deterrence constitutes an effective response to the more critical, but less likely, forms of conflict that confront us. We must appreciate that some conceptual notions, though ostensibly esoteric, have significant practical implications: (1) that deterrence, to be totally effective, must be operative at all levels of potential conflict; (2) that the selective application of force at lower levels of conflict actually may enhance deterrence at higher levels; and (3) that what contributes to combat effectiveness, or one's war-fighting capacity, may not necessarily contribute to improved deterrence. We also must improve our ability to "manage" public perceptions, both domestic and foreign, so as to exploit the symbolic aspects of power. Finally, we must formulate and be prepared to execute a strategy that is sufficiently robust to accommodate the need for selective engagement or disengagement from various alliance relationships. No longer will we be able to expect bona fide alliance burden-sharing in the absence of an effective coalition strategy, but we must be chary about overdependence on coalitions as the foundation of our strategy.

There are issues of organizational effectiveness and efficiency that also demand our attention. Briefly stated, we need greater executive-legislative, interagency, and interservice cooperation and coordination so as to provide more coherent policy and to eliminate wasteful redundancy and competition. The most obvious vehicles for effecting such changes are structural (e.g., the elevation of the president's assistant for national security affairs to cabinet rank or the complete reorganization of the armed services along functional lines). The less obvious, more difficult, and more time-consuming intermediate step is the intellectual adjustment that must be made by all parties concerned if we are to overcome the hidebound parochialism that has impeded such measures to date.

At the operational level, a number of changes merit more detailed examination. We need more flexible, adaptable force structures designed for a broad range of conflict environments—creative alternatives, in other words,

that will alleviate the necessity of having to choose between heavy forces that can function effectively only against an armor-intensive threat or light forces that can survive only against insurgents and terrorists. This flexibility will require the concurrent formulation of a more dynamic, comprehensive doctrine that accommodates all levels of conflict in integrated fashion. It also suggests the need to build these force structures around mixed technologies (in lieu of sole reliance on advanced technologies) appropriate to specific threats and missions. A related need, given the potentially volatile and hostile environment facing the United States in the years ahead, is for enhanced force projection capabilities that will allow us more effectively to exercise global "presence" without undue reliance on potentially vulnerable overseas bases.

We must also rethink our approach to threat assessment. Although the Soviet Union will remain our most formidable adversary, we must disabuse ourselves of the notion that we face a monolithic threat orchestrated out of Moscow. We must instead recognize the nature and magnitude of a growing number of independent threats, which, if not dealt with effectively on their own terms, surely will create conditions that the Soviets can exploit to our strategic disadvantage. Likewise, in an age where expectations and avenues of fulfillment remain frustratingly incommensurate for many, we must be more sensitive to the near-inevitability of various revolutionary movements. The lessons of Iran and Nicaragua are a sobering reminder that repressive incumbent regimes, even if staunchly anti-Communist or anti-Soviet, may not provide the strongest anchors for the United States in a sea of unrest. We therefore must be better attuned to emerging social and political developments and be willing to shift our priorities (and, if necessary, our loyalties) accordingly to ensure the attainment of broader strategic goals. To do so, we must, among other things, place increased emphasis on further enhancing our human intelligence collection capabilities and markedly expanding our store of foreign area expertise through accelerated programs of language and cultural training.

These ideas bear no stamp of originality, nor do they penetrate beyond the veneer of generalization. To do otherwise would be inconsistent with, and unsupportable by, the necessarily abbreviated nature of this *tour d'horizon* of the future. However, the future can be met successfully only if fundamental principles, such as these, first are agreed to before we embark on the more concrete, utilitarian measures that have tended to set the terms of debate over military reform thus far.

Vienna, Virginia

Notes

1. Hegel's Axiom of Internal Relations states that the relations by which terms are related are an integral part of the terms they relate. Systems theorists and cyberneticians have exended this to mean that (within limits) everything is related to everything else. See Stafford Beer, *Decision and Control* (New York: Wiley, 1966), p. 242.

2. The potentially stabilizing effects of nuclear proliferation are discussed by Kenneth Waltz, *The Spread of Nuclear Weapons: More May Be Better*, Adelphi Papers, No. 171 (London: International Institute for Strategic Studies, Autumn 1981.)

3. This view is shared by such incongruous bedfellows as Richard Barnet and Irving Kristol, who have asserted respectively that "the NATO allies are drifting apart" (*Bulletin of the Atomic Scientists*, January 1984, p. 8) and "The Atlantic Alliance . . . is gradually emptying itself of all meaning" (*Reader's Digest*, February 1984, p. 165).

4. Contributing to the United Nations' demise will be three major factors: its inbuilt lack of juridical authority; a continuation of the voting patterns of recent years, in which the United States voted with the majority of the General Assembly only about one-fourth of the time; and general public disaffection with the institution's inability to get things done.

5. Hunter Lewis and Donald Allison, *The Real World War: The Coming Battle For the New Global Economy and Why We Are in Danger of Losing* (New York: Coward, McCann, and Geoghegan, 1982), p. 9.

6. U.S. influence on the world financial market, for example, is overwhelming. Every country in the world measures its currency against the dollar. Some 55 percent of world trade is invoiced in dollars. Around 80 percent of all international bank loans are denominated in dollars. Central banks hold about 75 percent of their foreign-currency reserves as dollars. Because U.S. financial

markets are the freest and biggest, what happens to its interest rates, share prices, etc., has an irresistible pull on the rest of the world. (*The Economist*, 24 September 1983, p. 58).

7. Martin Anderson, former domestic policy adviser to President Reagan, has observed that those with the power to make such decisions have collectively decided that "the political consequences of adopting policies to bring spending in line with revenue are more painful than the policies they now follow." ("Why the Budget Doesn t Balance," *Washington Times*, 15 December 1983, p. 1C).

8. William R. Hawkins, "Neomercantilism: Is There a Case for Tariffs?" *National Review*, 6 April 1984, pp. 25-39.

9. There is a self-deluding tendency, especially in the United States, to view the current oil glut, the disarray within OPEC, and the continuing dependency of states (Mexico, Nigeria, and others) on oil revenues as setting the tone for the future. However, given the volatility of the oil market, the low likelihood of large-scale conversion to alternative energy sources by the year 2000, and the declining tolerance for sacrifice within prosperous, advanced societies, it is not difficult to imagine any of a variety of circumstances (e.g., terrorist incidents, unexpected regime changes, interstate conflicts between oil-producing states, Soviet adventurism, or merely petulant behavior by oil producers bent on high-stakes international arm twisting) precipitating future (seemingly irrational) oil-related crises. For two brief, but authoritative, arguments in support of this contention, see Frank Zarb, "True or False: Energy Planning Is Possible," *Washington Post*, 25 August 1983, p. A21; and Daniel Yergin, "2 Views on Oil," *Washington Post*, 29 April 1984, p. E21.

10. Forty-four percent of the American population will be in the forty or older bracket by the year 2000. South Korea's median age will not reach thirty until sometime between 2000 and 2010, while Brazil s median age will be only about twenty-seven as late as 2025.

11. The problem will be much worse in the United States (a drop of 25 percent) than in the Soviet Union (a drop of 16 percent); still worse will be the situation in Britain and West Germany, where available manpower is expected to fall 50 percent by 1990.

12. Increasingly, in other words, policy formulation (especially within the military sphere) will become the preserve of individuals whose expertise derives principally from academic credentials rather than from "the sting of battle." The result could be a pervasive degree of emotional disengagement that produces unrealistic, historically unsound, culturally insensitive, and even socially divisive policies.

13. In the words of Herbert Stein, chief economic adviser to Presidents Nixon and Ford: "The radical conservative revolution is the dream of conservatives out office, but not the practice of conservatives in office." ("The Reagan Revolt That Wasn't," *Harper's*, February 1984, pp. 46-53). The same will be no less true of liberals when they return to office. For a contrasting view, see Charles Krauthammer, "What Ever Became of the American Center?" *Time*, 19 December 1983, pp. 89-90.

14. For a fuller discussion of the prospects for world government, see Gregory D. Foster, "Wilsonian Political Thought and the Prospects for World Government in the Century Ahead," in *Politics and Administration: Woodrow Wilson and American Public Administration*, edited by Jack Rabin and James S. Bowman (New York: Marcel Dekker, 1984), pp. 277-95.

15. Klaus Knorr, "Threat Perception," in *Historical Dimensions of National Security Problems*, edited by Klaus Knorr (Lawrence, Kansas: University Press of Kansas, 1976), pp. 78-119.

16. If a coordinated international terrorist network were to emerge, as some have posited (e.g., Claire Sterling, author of *The Terror Network* and other works on the subject), it would pose a first-order threat because of its damage/disruption potential and its supporting resource base. However, petty jealousies, conflicting objectives, and ethnic, cultural, and linguistic barriers are likely to preclude this amalgamation.

17. This list is adapted from a similar list of Soviet foreign policy objectives provided by Alexander Dallin, "The Soviet Union: The Making of Foreign Policy," *Bulletin of the Atomic Scientists*, August-September 1983, pp. 27-31.

18. Charles D. McFetridge, "Some Implications of China's Emergence as a Great Power," *RUSI Journal*, September 1983, pp. 40-43.

19. For purposes of this analysis, first-order powers are considered to be the member states of the NATO and Warsaw Pact alliances, Japan, the P.R.C., and Australia. Second-order powers include the various second-order threats identified previously, as well as such others as Israel, South Korea, and Thailand. Obviously, any such scheme of this nature suffers from inherent flaws, but these should not detract from the otherwise helpful insights that can be gained from such constructs.

20. For an alternative perspective, see Edward N. Luttwak, *The Grand Strategy of the Soviet Empire* (New York: St. Martin's Press, 1983), who postulates (not very compellingly) that considerable potential exists for the Soviets to launch an attack against the P.R.C. in the not-too-distant future.

21. Robert W. Komer, "Maritime Strategy vs. Coalition Defense," *Foreign Affairs*, Summer 1982, pp. 1124-44.

22. The measure of public uncertainty and ambivalence on this issue is reflected in polls taken before and after the November 1983 showing of the ABC television drama "The Day After." Before the show, 65 percent of viewers felt that a nuclear war between the United States and the Soviet Union was very or somewhat likely by the year 2000. After the show, *63* percent felt the same way! ("Fallout from a TV Attack," *Time*, 5 December 1983, p. 39.

23. Interview with Michael Howard, "Nuclear Arms Make Chance of War 'Far More Remote'," *U.S. News and World Report*, 9 April 1984, pp. 37-38.

24. Harlan Cleveland, "Defining Security: A Sober 'Threat Analysis'," *The InterDependent*, November December 1983, p. 3.

25. "Nuclear War by 1999?" *Washington Post*, 4 January 1976, pp. F1, F4.

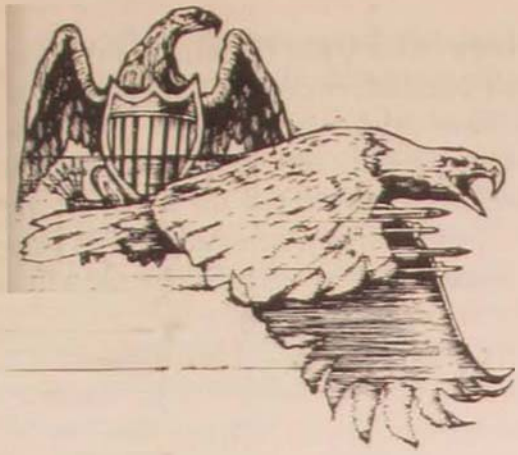
26. John Keegan, "The Specter of Conventional War," *Harper's*, July 1983, pp. 8-14.

27. As contentious as this claim is, it is shared even within the NATO alliance. For example, West Germany's "White Book 1983 on the Security of the FRG" contended that, despite unfavorable developments for the West in the military balance of forces, at the moment it can be assumed that the danger of a war in Europe "is not present."

28. The precise role of the Soviet Union will continue to be a source of serious contention between those who argue that the Soviets "mastermind" or exercise central direction over global terrorism; those who maintain that they merely provide support in the form of weapons, training, finance, and propaganda; and those who see little clear evidence of Soviet control. For one side of this debate, see Ray S. Cline and Yonah Alexander, *Terrorism: The Soviet Connection* (New York: Crane, Russak, 1984).

29. Of the 125,000 Cuban immigrants who came ashore in the 1980 Mariel boatlift, up to 40,000 reportedly were veterans of Castro's jails and mental hospital., while another 10,000 were considered highly dangerous or criminally insane. Additionally, some assessments have suggested, up to 3000 were secret agents sent to spy on fellow exiles and to run a vast underground network for addicting Americans to drugs; as many as 400 apparently were assigned solely to narcotics trafficking. (*U.S. News and World Report*, 16 January 1984, pp. 27-30).

30. *Report of the DOD Commission on Beirut International Airport Terrorist Act, October 23, 1983* (Washington: Government Printing Office, 20 December 1983), p. 4.



THE ROOTS AND FUTURE OF MODERN-DAY MILITARY REFORM

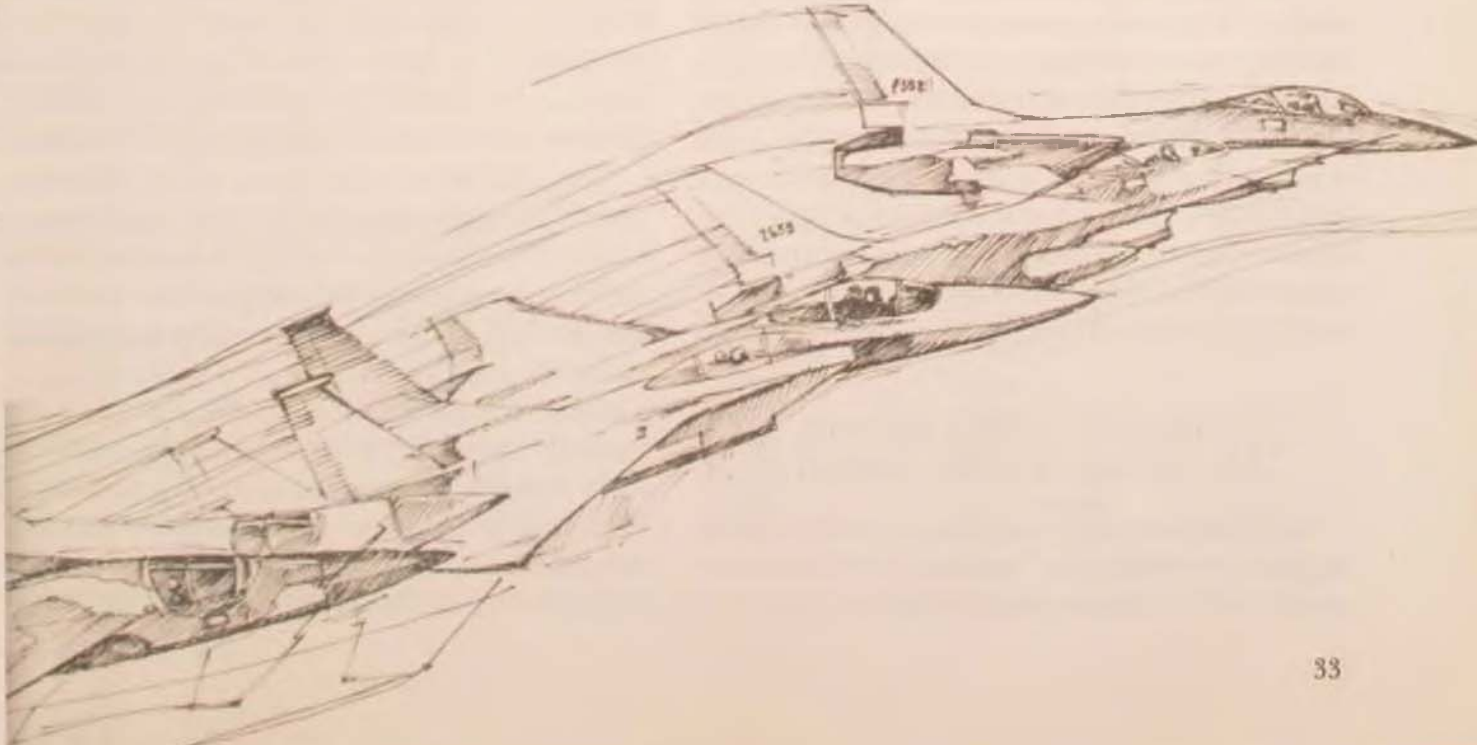
THE HONORABLE DENNY SMITH, MEMBER
UNITED STATES HOUSE OF REPRESENTATIVES

IT was thirty-one years and thousands of flying hours ago that I climbed into an Aeronca Champ on a small dirt strip in Ontario, Oregon, for my first solo flight. It was a moment that I shall always remember, and it was the start of my flying career.

During the past three decades, I have flown scores of military and commercial aircraft, including the T-34, T-28, T-33, F-86L, F-89H, F-89J, F-84F, F-4B, F-4C, and F-4D in the Oregon Air National Guard and on active duty in the U.S. Air Force, as well as 707s for Pan American World Airways. If someone had told me as a young flyer that I would one day give up my flying career to enter the world of politics, I would have told them that they needed a head examination. However, I now find myself a member of the U.S. Congress, currently in my third term.

As a member of Congress from Oregon, I am considered a conservative by every measure on issues ranging from national defense to foreign and fiscal policy. Thus, as a member of the Budget Committee, for example, I am convinced that our federal government has spent far too much for far too many things for far too long. We need to reform our spending habits.

I also am cochairman of an organization in Congress known as the Military Reform Caucus (MRC), a caucus that seems to have received much attention during the recent debate about the defense budget. At last count, there were 133



members in the caucus, a group that includes 26 members of the Senate and 107 members of the House. The caucus is bipartisan and consists of an almost even split of Republicans and Democrats. We hold meetings on a regular basis in the Capitol. Ideologically, our members represent the political spectrum from the very liberal to the very conservative. The MRC was founded in 1980 under the direction and foresight of two Armed Services Committee members in Congress, Senator Gary Hart (D-Colorado) and Congressman William Whitehurst (R-Virginia).

Interestingly enough, the Military Reform Caucus has not and does not wade into the waters of foreign policy or into the swamps of nuclear strategic theory. It is my belief that it never should. While there are certain to be as many descriptions of the goal of the MRC as there are members in the caucus, I believe that every member of the organization would agree that some of our common goals are to generate and implement ideas and incentives that will strengthen our nation's defenses, to reform the military procurement process, and to provide a forum for discussing innovative ideas in military strategy and doctrine.

As the cochairman of the MRC, I believe that each of our legislative reform initiatives should always rest on two basic principles: we want military forces that can win when called upon; and we want the support of the American people for such forces, not for one or two years, but for the long haul—to the year 2000 and beyond. It is our strongly held belief within the caucus that the American people will not support the defense that this country needs unless they are reasonably convinced that they are getting their money's worth from the dollars they spend.

Origins of Today's Reform Movement: Fighter Aircraft

I don't believe one can truly pinpoint a time or place in which the "military reform movement," as it is known inside Washington's circles, was born. Ever since the birth of the nation, people of conscience—both in and out of uniform—have bucked the tide as reformers trying to improve military effectiveness or curb gross waste. And ever since the birth of the nation, also, the military bureaucracy has usually responded by trying to resist change while stifling the reformers. But we now know that any military organization that becomes rigid or stagnant in the face of change dooms itself by its own nature. Successful military forces must be constantly adapting, changing, and "reforming," if they are to remain viable as the uncertain future unfolds. Our organized military forces have been in existence for almost 200 years and have certainly changed and reformed extensively during that period—albeit often too slowly and sometimes at great cost in the form of blood of American soldiers, sailors, and airmen.

But in my mind, there has coalesced in the last twenty years a clearly identifiable, progressive, and innovative movement advocating coherent reform of the "establishment" approach to tactics, strategy, training, and testing and procurement of our weapon systems.

The roots of today's movement can be traced to an informal alliance of former and active-duty fighter pilots of the U.S. Air Force and Navy with civilians in the Office of the Secretary of Defense (OSD), Congress, and the aerospace industry, who, in the 1962-65 period, launched a crusade to correct the growing deficiency in our nation's air-to-air combat capabilities.

The deficiency that these early reformers were addressing resulted from the fact that the USAF/DOD post-World War II leadership had embraced a nuclear-bombing-comes-first philosophy which swept aside most thoughts of air-to-air combat. The U.S. Air Force, even Tactical Air Command (TAC), embraced the nuclear "trip wire" posture in Europe and held little interest in conventional war problems. The nuclear influence on air combat was evidenced by the creation of North American Air Defense Command (NORAD) and Air (Aero-

space) Defense Command hierarchies in Colorado Springs and the development of a succession of USAF and USN all-weather air defense interceptors to down nuclear bombers that might threaten the continental United States or the fleet at sea. The airplanes, all designated "F" for fighter, included the F-101, F-102, F-106, and F-4. They had some common traits, such as radar missile armament, poor cockpit visibility, poor sustained rate of turn, no gun, very high cost, and very large size.

Consider Table I, which lists the USAF jet tactical fighters introduced by this time and gives their approximate weight, cost, and quantity procured. As the table indicates, our tactical fighter aircraft were approximately doubling in size as each new generation came along. The early fighter reformers also noted that for each new generation, although the top speed and range (at cruise speed) generally increased somewhat, fighter dogfight performance deteriorated significantly.

Despite the Korean War experience, Tactical Air Command moved farther and farther away from traditional fighter missions toward "deep nuclear strike," which, with the big-bang nuclear weapons, was to be performed even in the dark and in poor weather. TAC's effort to compete with Strategic Air Command spawned the single-purpose, deep-strike F-111—the follow-on to the existing TAC nuclear low-altitude bomber, the F-105. Despite the single-purpose nuclear bomber design of the F-111, the Air Force and DOD advertised it as a multipurpose fighter fully capable of air-to-air combat, all-weather interception, conventional bombing, and even close air support.

But by 1965, the agony of the F-111, billed as our "next air superiority fighter," was clear, and the possibility of employing it effectively as an all-purpose aircraft had turned into a nightmare. The plan for 1200 F-111 fighters was cut back to less than 500. The aircraft's air superiority capability was known to be essentially nonexistent. Almost any fighter in the world would totally dominate the F-111 in air-to-air combat, even though the F-111 was at the time the world's most sophisticated, most complex, and by far most costly fighter.

I do not want to imply that having a nuclear-strike capability is not justifed, but I do want to illustrate the hazard of being less than honest about the purposes and capabilities of a major military program. Most of the influential people in Washington are relatively ignorant about combat aircraft. There are countless other concerns and tasks that they must see to. In any event, most tend to believe that if an airplane has an "F" designation, it must be a fighter, and they derive that "fact" from movies such as *The Blue Max* and *Dawn Patrol*. Furthermore, they believe that if they authorize $50 million or more for a *fighter*, then they must have bought their boys in blue a marvelous air-to-air combat machine.

The early task of the fighter reformers was to straighten out that misconception and get the U.S. Air Force and Navy back into the air com-

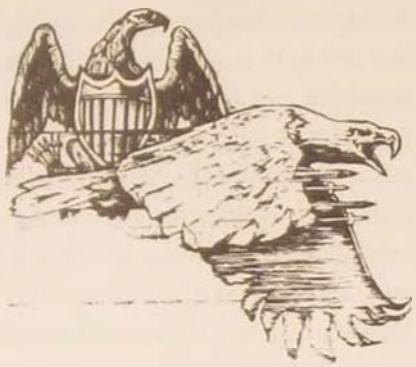
Table I. USAF Jet Tactical Fighters (1944-74)

Fighter Type	Years of Entry Into Service	Quantity Procured	Approximate Weight*	Unit Cost (thousand dollars)
F-80	1944-49	1435	16,800 lbs	187
F-84	1945-54	4008	15,000 lbs (F)	466
F-86	1947-53	5890	14,500 lbs (E)	299
F-100	1952-58	2249	30,000 lbs (D)	741
F-105	1954-63	833	38,000 lbs (D)	2500
F-111	1964-74	469	76,000 lbs (A)	10,200

*Approximate weights include internal fuel. Alpha characters in parentheses indicate specific fighter models.

bat business. It was far from easy.

Two of the early evangelists for small, agile, uncompromised air-to-air fighters were former USAF/USN combat/test pilot Chuck Myers and former USAF fighter pilot Jay Ray Donahue. With some help from the Lord, they stumbled upon powerful support from the work of Captain John Boyd, tactician and Korean War fighter pilot, and civilian analyst Tom Christie.



Between 1954 and 1960, Boyd had revolutionized the teaching of air-to-air tactics at the USAF Fighter Weapons School and Combat Crew Training Squadrons at Nellis AFB, Nevada—the Tactical Air Command's "doctorate-level" course in fighter tactics. While at Nellis, he conceived, developed, and wrote his famous *Aerial Attack Study*. (The brilliant new three-dimensional fighter maneuvers and the maneuver/countermaneuver logic developed by Boyd in this study are still the basis for the current fighter tactics of every modern air force in today's world.) After leaving the Fighter Weapons School in 1960 to get an engineering degree under Air Force sponsorship, Boyd moved to a tour at the Air Proving Grounds Center at Eglin AFB, Florida, where he, assisted by mathematician Tom Christie, spent most of his time developing what is now known as the "Energy Maneuverability Theory." As it turned out, this effort not only provided concise, quantitative aircraft maneuverability comparisons as a tool for tactics development but also created a new language for the pilot to use in talking with the aircraft designer. Boyd's work provided the tools needed to explain the character of aircraft maneuvering performance that was required to yield a superior air combat fighter.

Others who became involved in spreading the small, maneuverable fighter gospel included USAF pilots Everest Riccioni and Bob Dilger. By 1965, the early reformers had stirred up enough interest in USAF Headquarters and at TAC that Major General Arthur C. Agan, Jr., Assistant Deputy Chief of Staff for Plans and Operations, convened a special study group, which included several World War II and Korean War veteran fighter aces, to assess the situation. The fighter reformers received strong support from the resulting fighter study, and after an "assist" from the North Vietnamese in the form of MiG-17 attacks on F-105 bomber formations in April 1965, the issue of our air-to-air combat deficiencies was given recognition.

Early in 1966, the "Preliminary Concept for FX" was released by TAC. It was reasonably well oriented to the air-to-air problem but invited additional multipurpose capabilities for night and poor weather air-to-ground capability. Shortly thereafter, the Navy (about to escape from the TFX/F-111B commonality net) created an operational requirement for the VFAX, a deep-strike, all-weather interceptor, dual-purpose nightmare of its own. Then entered OSD (DDR&E) with the suggestion that the Air Force and Navy combine their requirements to yield a new common "fighter."

Many from the old TFX/F-111 commonality camp climbed on board and rejuvenated the multipurpose/joint service theology which, until then, had been greatly weakened by the F-111 disaster. The fighter reformers managed to ward off the proponents of commonality, but just barely. Boeing, Lockheed, and North American received USAF contracts to establish a spectrum of designs for the FX. Their work, much influenced by the Aeronautical Systems Division bureaucracy at Wright-Patterson AFB, Ohio, produced a spectrum of mediocrity that

was used by the Air Force Systems Command (AFSC) to prepare an FX Concept Formulation Package, which suggested an airplane ranging between 55,000 and 65,000 pounds takeoff weight—essentially as large as the F-111 and almost as unmaneuverable.

In the midst of all this, Boyd was ordered to the Pentagon to bail out the FX design. His pioneering and disciplined tradeoff work carved the FX down to 40,000 pounds while tremendously increasing its accelerating and turning performance. This was the first time that a U.S. fighter design specification had ever been based on any formal maneuvering requirements. The swing wing and two-man crew advocates were defeated. However, because of the airplane's inherent large size, which resulted from the demands for the useless high mach and very large radar (plus a myriad of other "specs" irrelevant to air-to-air combat), it was not practical to win the argument for one engine. The Office of the Secretary of Defense (DDR&E) further degraded the engine by insisting on commonality between the engine of the Air Force FX and that of the Navy VFX (initially called the VFAX). As a result, the Navy's influence raised the temperature, pressure, and bypass ratio of both engines. Although the Navy later abandoned its version of the engine (F401), it managed to leave an indelible mark on the Air Force engine. These commonality compromises contributed significantly to the problems associated with the F100 engine; they also caused serious reductions in the performance of the current F-15 and F-16.

In 1966, partway through the battle over the FX's size and air-to-air performance, Pierre Sprey, an aerospace engineer and analyst with a deep interest in combat history, joined OSD. He was quickly convinced by the logic of John Boyd's approach to fighter tactics and maneuverability and soon became a close collaborator and supporter of Boyd's efforts to increase the dogfight performance of the FX while diminishing its size. Sprey's experience in these early FX tradeoff battles stood him in good stead when, several years later, the Air Force asked him to play a major role in shaping a new, single-purpose, close air support airplane, the AX, which became the A-10.

The F-15 that AFSC produced after Boyd's innovative maneuverability tradeoffs and the associated bloody battles to eliminate specifications and requirements unnecessary to air-to-air combat was, unfortunately, a disappointment to the fighter reformers. The airplane's size was too big, its dogfight performance fell significantly short of what could have been achieved with greater design discipline, and the cost was so high as to preclude achieving an adequate fighter force size. No single group was at fault: OSD (DDR&E) contributed by demanding engine commonality and an oversized, overcomplex radar; TAC and AFSC headquarters added a laundry list of performance-robbing "goodies" and specifications ranging from a maintenance ladder to a combat-irrelevant requirement for mach 2.5 top speed that degraded performance in the combat critical transonic region. Ironically, the production F-15 failed to meet this mach 2.5 specification by a wide margin.

Interestingly enough, it was the disappointment with the final F-15 outcome in 1968 that led the fighter reformers—spearheaded by Boyd, Riccioni, and Sprey—to almost immediately begin the seemingly quixotic task of starting a genuinely "hot," small, and affordable fighter. This quest, with the help of Deputy Secretary of Defense David Packard's support for prototyping, soon turned into the reality of the Light-Weight Fighter Program and the YF-16/YF-17 competitive flyoff (the flyoff being another reformer-engendered idea). Just as the flyoff was taking place, James Schlesinger became Secretary of Defense and, convinced by the fighter reformers' case for a hotter fighter whose affordability would permit sizable increases in force structure, undertook a successful personal campaign to put the F-16 into large-scale production, despite the opposition of sizable portions of the USAF hierarchy.

At this point, let us step back from the details of fifteen years of battles over air-to-air capabilities in the Air Force. Today's military reform movement encompasses much wider aspects of warfare—land, sea, and air—than just air combat. Still, it is of more than passing interest that most of the leading thinkers in military reform today come out of the fighter business, that they coalesced during the sixties battles within the U.S. Air Force over the importance of air-to-air capabilities and the need for a hot, small, single-purpose fighter, and that their first highly visible success was the F-16. Put another way, had the Air Force in 1968 decided on a more austere, higher-performance F-15, there would almost certainly be no F-16 today and, perhaps, no military reform movement.

In my view, the attractive feature of the reform movement that began with these crusades to improve the war-fighting capability of the U.S. Air Force is that the goal was to improve the product of DOD and to extract more from our investment. It was during this time that increased competition, "fly before buy," competitive prototypes, flyoffs, highly lethal air-to-ground cannons, operational testing, and the concept of low-cost/high-effectiveness weapons all became words of the day, due to the efforts of the early reformers.

Today, these are all issues of vital concern to the Military Reform Caucus; and we have already successfully translated some of them into legislation to improve the way DOD does business, particularly in the areas of operational testing, competitive procurement and development, survivability testing, and the introduction of highly effective antitank air-to-ground cannons.

Today's Reformers and the Future

The reform movement has learned much and changed significantly since the early controversies over dogfighting. It has broadened its interest from shooting down airplanes to all the means required to win wars. The reformers have increased their knowledge of combat experience and combat history substantially. Based on recent combat experience and Boyd's remarkable new syntheses of tactics and strategy, the reform movement has deepened its understanding of war, particularly the most-important "people" side, as opposed to the often-overemphasized "hardware" aspects.

Despite the broadening of interests, the reform thinkers are still fierce advocates of tactical air power. They strongly believe that, given a major strengthening of our current gravely weak close air support assets, tactical air could be extraordinarily effective in determining the outcome of modern land combat. Another theme of continually growing importance in current reform efforts is the focus on the warrior rather than the manager, on leadership and unit cohesion, on innovative tactics and stressful "free-play" training. The emphases are on the "man in the loop" and his skills rather than on the mostly futile yearning to stand off from the battle, and on engaging and solving the problems of combat as they really exist rather than buying our way out with unsuitably complex technology that may ultimately fail in combat. We demand realistic testing of concepts and hardware, testing that ensures that our weapons work amid the chaos of the battlefield, that they work in the hands of typical troops, and that they continue to work even when opposed by the resourceful enemy. Personally, I am also naturally attracted by the reform movement's demonstrated contempt for rigid doctrine, along with the group's willingness to subject its own views to open debate and to change, based on new evidence and better ideas.

On the congressional side of reform, there has been a recent flurry of Military Reform Caucus amendments to the FY86 Defense Authorization Bill. Two of these amendments tell DOD what survivability testing to do, one defines and prohibits unacceptable conflict of interest, and several reflect disenchantment with

the procurement track record of DOD and its industrial partners. How do these congressional reform actions relate to the reform movement within the Department of Defense and the services? It is easy to interpret these congressional actions as a lack of faith in the possibility of reform from within the system. On the contrary, I believe that reform without the dedicated participation of courageous people within DOD and the services is impossible.

However, I know that congressional action—particularly legislation that introduces incentives for such things as increases in real combat capabilities, decreases in costs, increases in competition, and more responsible, realistic testing—can go a long way toward creating the conditions that make it possible for dedicated reformers inside the system to achieve useful change. Thus, the Military Reform Caucus will continue to introduce legislation that changes fundamental DOD incentives and behavior until we see evidence that reform has become a self-sustaining process within the Department of Defense.

You may well ask what kind of evidence, what kind of change, would convince us that DOD and the services were well on the road to major improvements in the defense we get for the dollar. A detailed answer might require a book, but I think that I can outline a few litmus tests that would be very strong indicators that real, not cosmetic, reform is taking place.

On the most important front, the "people" front, I would look for:

- increased promotions for tacticians and trainers, as opposed to managers and acquisition types;
- major decreases in personnel turbulence within combat units and more career-long identification of individuals with a unit of some significant size (for example, a regiment, wing, or ship squadron); and
- major increases in training time, particularly in live shooting and in two-sided free-play combat exercises between units.

These three features are obviously far from a complete prescription for DOD personnel reform, but if we saw these three changes instituted, we would certainly know that DOD had abandoned "business as usual" in the people area.

On the ideas/doctrine/missions front, I would look for similarly simple indicators:

- A Secretary of Defense initiative to institute constructive bureaucratic competition (i.e., plenty of "overlap and duplication") between the relevant services for every crucial military mission: for example, infantry, close air support, naval mining, intertheater lift and rapid deployment, antisubmarine warfare search, air-to-air, etc.
- In the Army, a major reduction, say 30 percent or more, in infantry and armor division weight/vehicle count/personnel strength to significantly increase unit agility and deployability; correspondingly, a major increase, perhaps a doubling, in the total number of high-mobility infantry and armor units.
- In the Air Force, a major increase, perhaps a tripling, in the number of active-duty, dedicated close air support units, with each unit semipermanently assigned in peacetime to an Army maneuver unit for training. In concert with this, an A-10 replacement aircraft program at one-half the unit cost, incorporating better survivability and better cannon accuracy.
- In the Navy, a major increase, say a doubling, of the submarine force structure, by augmenting our nuclear subs with modern diesel-electric subs. Also, initiation of a single-purpose, carrier-based air-to-air fighter and a close support aircraft—the two intended to double the naval air force structure.
- In the Marine Corps, a major shift from World War II-type daytime frontal assault of defended beaches to nighttime infiltration, accompanied by a mobility-increasing trimming of unit size/weight as in the Army, together with a major increase in infantry antitank capability.

Note that these four points are litmus tests of whether service doctrine changes (in each case

away from attrition warfare and toward maneuver/blitzkreig-type concepts) are serious enough to impact force structure and budget.

And finally, on the hardware and acquisition front, a short list of indicators is quite adequate for determining whether our current procurement mess is really being reformed:

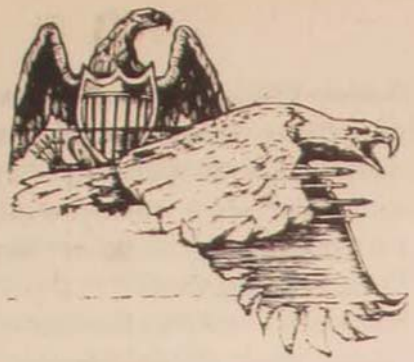
- In procurement, when more than 50 percent of major weapon systems are bought from two or more competing contractors throughout the production period.
- In R&D, when more than 50 percent of major weapons developments result in a competitive prototype flyoff or shootoff.
- In testing, when operational tests always test the new system side-by-side with its predecessor in a realistically stressful combat setting.
- Overall, when at least 50 percent of new major weapons programs come in at lower unit program costs and larger total production runs than the weapons they are replacing—something that technology is achieving every day in the civilian marketplace but which has been almost totally denied to us in the defense business.

Are we likely to see most of these indicators flash green in the next year or the year after? Not likely. But the military reform approach symbolized by this short list of litmus tests is a good deal more serious, more practical, and more likely to win wars than the let's-throw-money-at-the-problem approach that we have been practicing for far too long.

Washington, D.C.

Description of a "true type of natural soldier": Sane, cool, and monosyllabic, he would when the occasion demanded take enormous risks and, with an uncanny sensibility, carry them off. He was one of those rare individuals who seem to require the stimulus of danger to raise them to the highest pitch.

Guy Chapman
Passionate Prodigality, p. 39

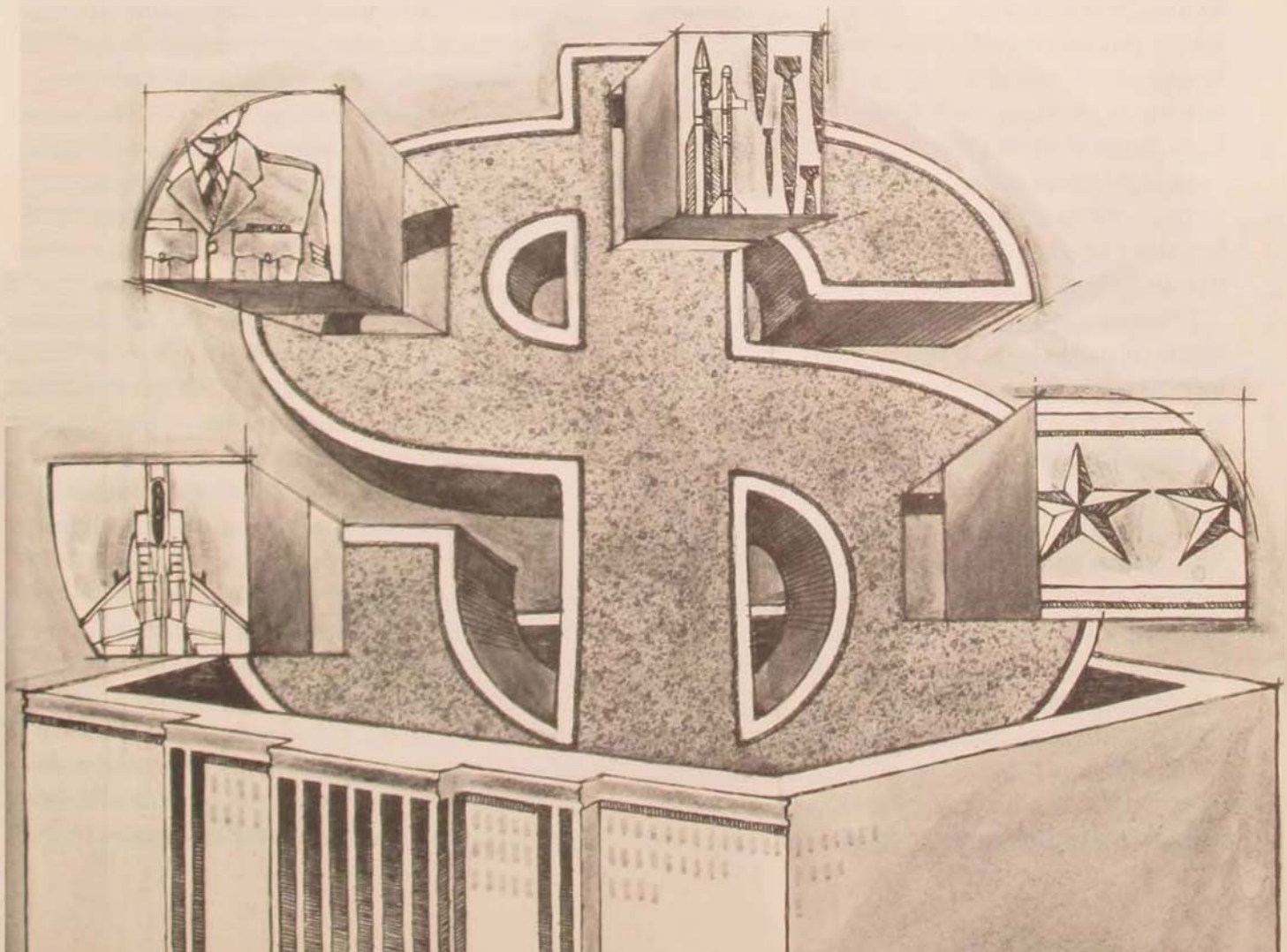


THE NEED FOR MILITARY REFORM

THE HONORABLE GARY HART, MEMBER
UNITED STATES SENATE

THE defense debate in the United States is today undergoing a profound transformation. For many years, it was little more than a debate about the size of the defense budget. One group argued that the Soviet military challenge was growing and that to meet it we should give the Pentagon more money. Another group countered that we were overestimating the threat and that the Pentagon was poorly managed anyway, so we should spend less for defense. Neither paid much attention to the fact that the size of the defense budget is only one component (and often not the most important one) in determining whether a military or a nation wins or loses a battle, a campaign, or a war.

Today, the defense debate increasingly includes a third group of people, some of whom are politicians, some civilian defense thinkers, and some serving military officers, especially



more junior officers. They are known as military reformers. Military reformers focus their attention not on the size of the defense budget but on the question: "What do we need to do to be able to win—and, therefore, deter—wars? Because the notion of winning is meaningless in a nuclear war, the military reform movement concerns itself only with conventional forces. However, it is beginning to transform the conventional force debate from one concerning budget size to a broader one focused on the art of war and the changes we need to make in order to develop military excellence.

Our recent military history makes it sadly clear that changes are needed. Our last clear-cut victory against a serious opponent was the brilliant and audacious Inchon landing. Vietnam, the Pyrrhic victory in the *Mayaguez* affair, the failed Iranian rescue mission, and the loss of almost 250 Marines to a lone terrorist in Beirut all attest to some deep-seated problems in the U.S. Armed Services. Even the Grenada operation, where we succeeded, raised more doubts than hopes when it took almost nine American battalions three days to defeat a handful of Cubans, most of whom were construction workers.

In seeking to determine where we have gone wrong, we must start by looking at the basic building blocks of any military: personnel, tactics and strategy, and hardware.

Personnel questions are usually discussed in terms of pay, service entrance tests, and so on. But these issues miss many of the most critical aspects of military personnel policy.

One such issue is unit cohesion, the psychological bonding betweeen individuals that takes place within the small, basic unit—the fire team, the squad, the aircraft crew, or the ship's section. In the stress and chaos of combat, people fight less for "king and country" than for their buddies. If the persons next to them are not buddies but strangers, they are more apt to sit out the fight or break and run.

Cohesion can develop only when a unit contains the same people for long periods. It takes time for strangers to come to rely on one another. Today, we do not provide that time. Many U.S. Army combat companies have a personnel turnover rate of 25 percent every three months, the highest in the world. So our troops remain strangers to one another, and stranger do not fight well together.

In the last several years, the Army has moved to address the unit cohesion problem by instituting the Cohort program and by adopting a regimental system, both of which keep people in the same unit for extended periods. But the U.S. Air Force also has a cohesion problem. In combat, it will be vitally important that flight crews and ground crews see themselves as part of the same team, know each other, and work well together. Yet too often, relations between flight and ground crews are not good. The personnel do not intermingle much, and the two groups are organizationally separate—unlike in the Navy and the Marine Corps, where the maintenance officer is also a squadron officer. The unity of flight and ground crews should be a basic requirement, and organizational arrangements should reflect this cohesion, not impede it.

When we look at tactics and strategy, we find that here, too, basics tend to be ignored. Our doctrine for these important fields has long been based on a style of warfare known as "firepower-attrition," in which the object is to destroy the enemy, man by man, killing his troops and blowing up his equipment faster than he can do the same to us. We have fought this way for more than a century. The Union won the Civil War with firepower and attrition, overwhelming the Confederacy with more men and more guns, more supplies, and more firepower. We rolled over the Germans in 1918 and the Axis in World War II in the same way.

This style, however, is badly outdated. Firepower-attrition can work for the side with superior numbers, an advantage we no longer possess. We cannot overwhelm the Soviet Union with superiority in manpower and material. We need a different style of warfare—"maneuver warfare." Here, the object is to de-

stroy the enemy's cohesion—and the opposing commander's ability to think clearly—by creating surprising and dangerous situations faster than he can cope with them. The German campaign against France in 1940 is a good example. So are most Israeli campaigns and Stonewall Jackson's Shenandoah Valley campaign during the Civil War.

In 1982, in a change of historic importance, the Army adopted maneuver warfare as doctrine and proclaimed it in a new version of its basic field manual, FM 100-5, *Operations*. While the Army still confronts a major challenge in translating the new doctrine from paper to the field, it is making a sincere effort to do so. Unfortunately, the other services have yet to follow the Army's lead. Strong support for maneuver warfare among younger Marine officers, and a few Marine generals as well, is meeting entrenched bureaucratic resistance from Marine Corps Headquarters and in the Marine schools at Quantico. The Air Force is still wedded to independent bombing, while manuever warfare calls for the integration of air-to-ground action with the ground commander's scheme of maneuver. Recent Army-Air Force agreements have not changed the fact that the Air Force sees subordination of its activities to the needs of the ground commander as a threat to its institutional independence and its tremendous investment in centralized control.

A new way of looking at the nature of conflict that is central to the military reformers' thinking was developed some years ago in the work of an Air Force officer named John Boyd (USAF retired). While a captain, Boyd developed the basics for the system of air combat currently used by the United States. His ideas were influential in the design of the F-16, which, at least in the "A" model, is probably the world's finest fighter plane.

Conflict, Boyd argues, is a matter of "observation-orientation-decision-action cycles," which each contending commander consistently repeats. First, the commander observes not only with his eyes and ears but with his radar, reconnaissance, etc. Then he orients; that is, he forms a mental picture of his relationship to his opponent. On the basis of this picture, he determines a course of action—he decides. He acts. Then he begins observing again, to see the effect of his action.

The commander with the faster cycle will eventually win, because he is already doing something different by the time the enemy gets to the action part of his own cycle. The enemy's action becomes irrelevant. If one side is consistently faster, the margin of irrelevance keeps growing, until the enemy either panics or becomes passive. At that point, he has lost.

It stands to reason that rapid execution of the Boyd cycle requires commanders with boldness, imagination, and initiative. Yet by and large, this is not the type of person being promoted in our armed services today. The cycle puts a premium on decentralization, since rapid decisions can be made only by the officer on the scene. Yet we are busy centralizing our command systems with the latest technology so that the President or a general in Washington can direct a platoon halfway around the world.

The Boyd theory has implications for military equipment as well. In research and development and in the procurement of new weapons, the changes made must be quick and major, so as to make the enemy's equipment irrelevant. In our military establishment, the changes are far too slow. A major new weapon system can be ten to twenty years in development. Our procurement policy favors weapons so complex and expensive that we must keep them in service for decades to get our perceived money's worth. The Navy, for instance, has built itself around the big aircraft carrier for more than thirty years.

And much of our equipment is too complex to work well on the battlefield. A good example is the Air Force's LANTIRN program. No technology, not even the human eye (which is much better than any device we can build) can do what the Air Force is asking of LANTIRN: locate and identify individual tanks in terrain

that includes trees and other cover while flying low at 400-500 knots. Tests where old American M-41 or M-47 tanks, which have much greater thermal signatures than Soviet tanks, are put out in the middle of the desert for LANTIRN to "find" are so unrealistic as to be no tests at all. And if the technology did work, what would LANTIRN demand of the pilot? It would require him to fly straight and level directly above enemy air defense guns and missiles. Those pilots who survived their first attempt to do that would not be eager to make a second run. Equipment that makes impossible demands on its operators is not likely to be effective in combat.

Pentagon spokesmen have taken to calling this a debate between quality and quantity. They portray the services as supporters of quality, wanting only the finest weapons for our soldiers, sailors, and airmen. These spokespersons also argue that this concern for manpower necessarily leads to very costly, very complex weapons—the M-1 tank, the F-15 fighter, the big nuclear aircraft carrier. By contrast, they label the military reformers as people who are willing to accept inferior weapons in order to buy more of them—or, sometimes, simply to save money.

In fact, the real debate is between two different definitions of quality. The defense establishment defines quality in technical terms: high technology equals quality. The military reform movement defines quality tactically, in terms of the characteristics that are most important in actual combat. That definition leads the reformers to emphasize such characteristics as:

- Small size. (Often, being seen means getting killed.)
- Reliability, ruggedness, and ease of maintenance. (Fragile equipment is soon out of action.)
- Rapid effect. (Our highly touted antitank missiles, as one example, require the gunner to guide the missile for about twenty seconds, a very long time when someone is shooting at you. Our radar-guided Sparrow air-to-air missiles place a similar requirement on fighter pilots.)
- Numbers. (In tactical terms, quantity is an important quality. A navy that depends on only thirteen ships—our thirteen large aircraft carriers—is a vulnerable navy. The finest fighter plane in the world is in serious trouble if it is outnumbered three to one or five to one by enemy fighters.)

The same characteristics that give a weapon tactical quality—small size, simplicity, ruggedness—also tend to make it cheaper. Thus, the real choice is not between quality and quantity but between technological quality in small numbers and tactical quality in large numbers. In other words, in most cases we can choose between a small number of weapons quite likely to be ineffective in actual combat and a large number of effective weapons. Current Pentagon policy prefers the former.

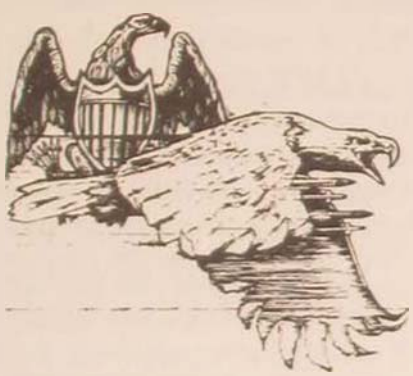
WHERE have these misguided policies come from? To answer that question, we must confront some serious problems in the military education and promotion systems.

All organizations need a balance among several different types of abilities—leaders, to motivate other people to overcome obstacles; managers, to organize procedures and processes; and theorists, to determine what the product should be. In a military service, the theorist's role is particularly important; it is the theorist, more than the leader or manager, who understands the art of war as a whole.

Unfortunately, in our armed forces today, these three roles have gotten badly out of balance. Our miltary educational institutions too often stress management, not leadership or theory. A cadet can graduate from the U.S. Air Force Academy with only a one-semester course in military history plus a few courses in "military studies."

The U.S. Army is leading the way in reforming military education. It has established a small second-year course at the Command and

General Staff College at Fort Leavenworth, Kansas. The entire year is devoted to military history, campaign analysis, and war-gaming, with the goals of teaching the operational art as well as tactics and helping officers learn how to think, not what to do or what to think. After graduation, the students are guaranteed a billet in the G-3 (Operations) shop of a division or corps, where they can apply what they have learned and further improve their skills. The new course is similar in many respects to the excellent interwar *Kriegsakademie* of the German Army, and like that school, it is centered not on formats and procedures but on the essence of the art of war. It is a major and important step in the right direction if our goal is military excellence.



But in other schools, students are likely to pass through the entire curriculum without even hearing about issues such as style of warfare. Two years ago, at the Air Command and Staff College, so few students signed up for an elective on the Vietnam War that the course had to be canceled. Courses on using a personal computer and preparing for a Pentagon assignment have been more popular. A hopeful sign, however, was that last year both the Vietnam War elective and the Air Force history course were filled through three semesters. Neither computer courses nor electrical engineering nor management courses are likely to help produce new George Pattons. General Patton, a lifelong student of military history, once wrote to Maxwell Taylor, then superintendent of West Point: "I am convinced that nothing I learned in electricity or hydraulics or in higher mathematics or in drawing in any way contributed to my military career. Therefore, I would markedly reduce or wholly jettison the above subjects."

The promotion process reinforces the problems created by the present system of military education. "Efficiency" and "zero defects," the hallmarks of the successful manager, are the best tickets to success. The leader and the theorist seldom meet the zero defects test. Their imaginative approach to problems naturally leads to some mistakes, and the promotion system punishes them for these mistakes without rewarding them for innovation. So problems persist and grow, with the underlying reasons often unrecognized and the proffered solutions largely conventional and uninspired.

How did this situation come about? To some extent, the question answers itself: If the military schools do not provide an education in the art of war and if those who educate themselves and act on their knowledge are not promoted, there will be few at the top to see the need. But that is not the whole problem. We must look deeper still, into how our armed services function as institutions.

There are essentially two institutional models, the bureaucratic and the socialized. In bureaucratic organizations, individuals focus on doing their jobs, defined in narrow "in-box, out-box" terms. This model has become typically American. We see the attitudes it produces in the paper-pushing bureaucrat, the congressman or senator interested only in getting more grants for his own district or state, the assembly-line worker who watches the clock instead of the quality of his work, and the executive seeking laws to throttle foreign competition instead of improving his product. And we see it in the military. Admiral Elmo R. Zumwalt, Jr., the former Chief of Naval Operations, has described some of the ways it works in the navy. For the last quarter-century or more, he writes,

> . . . there have been three powerful "unions," as we call them, in the Navy—the aviators, the sub-

> mariners, and the surface sailors—and their rivalry has played a large part in the way the Navy has been directed. . . . Whichever union a commander comes from, it is hard for him not to favor fellow members, the men he has worked with most closely, when he constructs a staff or passes out choice assignments. It is hard for him not to think first of the needs of his branch, the needs he feels most deeply, when he works up a budget. It is hard for him not to stress the capability of his arm, for he has tested it himself, when he plans an action.

The bureaucrat's narrow focus leads him to believe that the success of his small group within the organization is more important than the goals of the organization as a whole.

The socialized model, on the other hand, defines an individual's job quite differently. It seeks to persuade all who work within the organization to focus on its overall objectives. This is the approach used by such successful corporations as Toyota, Datsun, Sony, and I.B.M. A professor from the University of Tokyo gave an example in a talk at Stanford. He told of a San Francisco bank that had been doing poorly and was bought by a Japanese bank, which sent in new Japanese management. The American employees said, "Tell us what to do differently." The Japanese set forth the values and goals of their bank. The Americans said, "That's all fine, but tell us what to do." The Japanese continued to explain the values and goals of their corporation. The Americans, who wanted detailed instructions, were resentful at first, and productivity fell still further. However, finally they came to understand that they were to use their own intelligence and initiative—not only within their narrow jobs but in everything they could do—to further the bank's goals and values. Productivity rose dramatically, and the bank became one of the most successful in the city.

Bureaucratic behavior lies at the core of America's military inadequacies. It is a far more fundamental problem than the budget level of any given year. War demands rapid change, to present the enemy with the baffling and the opaque, resolving quickly into the surprising and dangerous. But change is bureaucratically uncomfortable; it upsets the existing arrangements, the traditional fiefs. In industry, bureaucratic behavior leads to bankruptcies like that of Penn Central. In government, it leads to massive waste. In war, it leads to defeats such as Austria's humiliation by Prussia in 1866 and France's collapse in 1940.

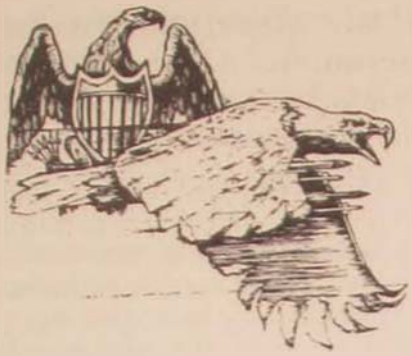
Early in this century, the British navy underwent a series of dramatic and very controversial reforms at the hands of Admiral Sir John Fisher. In his 1923 book *The World Crisis, Part I, 1911-14*, Winston Churchill wrote of these reforms:

> There is no doubt whatever that Fisher was right in nine-tenths of what he fought for. His great reforms sustained the power of the Royal Navy as the most critical period in its history. He gave the Navy the kind of shock which the British Army received at the time of the South African War. After a long period of serene and unchallenged complacency, the mutter of distant thunder could be heard. It was Fisher who hoisted the storm signals and beat all hands to quarters. He forced every department of the Naval Service to review its position and question its own existence. He shook them and beat them and cajoled them out of slumber into intense activity. But the Navy was not a pleasant place while this was going on.

THE PENTAGON may not be a pleasant place while we reexamine and reform our military services. But, as in Fisher's time, we can hear the distant thunder. It is far less pleasant to confront the new realities for the first time on the battlefield.

The time for reform has come.

Washington, D.C.



JCS REFORM: CAN CONGRESS TAKE ON A TOUGH ONE?

WILLIAM S. LIND

ONE of the most important requirements for victory in combat is a competent high command. History is replete with examples of good armies being defeated because of bad leadership at the highest level, from Carthage in the Second Punic War through the British in the American Revolution and the Confederacy in the Civil War to the Germans in World War II.

Do we have highly competent military leadership today from the Joint Chiefs of Staff (JCS), our most senior military council? Many observers think we do not. The last really brilliant American military action was the Inchon landing during the Korean War. The JCS opposed it. During the Vietnam War, the JCS consistently failed to provide good advice. In his autobiography, General William C. Westmoreland said that "no commander could ever hope for greater support than I received from . . . General Wheeler and the other members of the Joint Chiefs." The support was, of course, for a strategy that failed. The JCS blessed the plan for the Iran raid, a plan so complex that failure was inevitable. The hallmark of JCS action has become, not competent planning, but "pie dividing"—ensuring that each service gets a piece of the action. Grenada was the most recent case. The original plan called for just the Navy and the Marines to participate. But the JCS insisted that the Army and Air Force be brought in also, so they could get their share of the glory.

The root problem is that not only the JCS but virtually all the upper echelons of our military structure have become bureaucracies. In a bureaucratic organization, the overall goals and purposes of the institution—what it is supposed to accomplish in the outside world—are broken down into ever-smaller units until they constitute something one person can do, a job. The job is precisely defined and in most cases narrowly circumscribed. A variety of formal and (usually more powerful) informal sanctions work to keep the individual's effort focused within the "box" that is his job.

In theory, all the boxes are linked in a great chain which ensures that every job supports the institution's external goals and purposes. But, in fact, something different usually happens. The people in the institution must have some set of values in order, if nothing else, to prioritize their time and effort. They cannot focus on the institution's external goals and purposes; if they do, they quickly find themselves overstepping the bounds of their job description and getting slapped down. Faced with this unpleasant prospect, they tend to adopt two basic values. The first is personal career success. The second is a tendency to see as most important those things which take most of their time.

What is the effect of these two values on the way an institution functions? The decision-making process comes to be dominated not by questions relating to effectiveness in the external, competitive world but by intra-institutional considerations.

Why is this so? Because intra-institutional

issues—the office upstairs, the office downstairs, the competing program, branch, or service, etc.—take most of most people's time. As people come (usually unconsciously) to identify as most important the things that take most of their time, these issues, not the external world, become the bases of their decisions. And since internal matters are also the most important concerns of their superiors, they can best advance their personal careers by putting these matters first and working hardest on them. Ultimately, they become accustomed to subordinating external effectiveness to pleasing their superiors with reference to internal matters. Those who don't do so pay the price in terms of career failure.

Both tendencies—careerism and seeing as most important the matters that take the most time—are accentuated in institutions where there is no lateral entry (i.e., where the people at the top have spent three or four decades behaving this way) and where there is no regular calling to account by an annual balance sheet. Both characteristics typify military services.

The JCS is a microcosm of the overall military bureaucracy, but it is a very intense microcosm. It is specifically designed to be an arena where the services log-roll their parochial interests. The dual-hatting of service chiefs as members of the Joint Chiefs, the requirement for unanimous decisions, a joint staff made of officers who must return to their parent services—all these things not only perpetuate but intensify bureaucratic behavior. That the decisions and recommendations from such a body are frequently of little use in the outside world should not be surprising. The focus on intra-institutional concerns is built into the system.

JCS reform is now being discussed both in Congress and in the press. Two of the most important reasons are the disquiet of some members of Congress with deficiencies in recent military operations and calls for reform from two former JCS members, former Chairman of the JCS, Air Force General David Jones, and former Chief of Staff of the Army, General Edward "Shy" Meyer. Within the last several years, these two officers have made some sharp, public criticisms of the way the JCS functions. General Jones has said:

> The corporate advice provided by the Joint Chiefs of Staff is not crisp, timely, very useful, or very influential. And that advice is often watered down and issues are papered over in the interest of achieving unanimity. . . . Individual service interests too often dominate JCS recommendations and actions at the expense of broader defense interests.

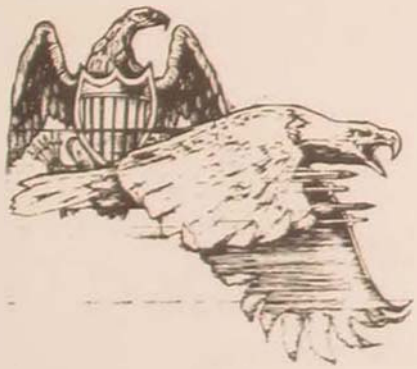
WHAT must be done to give reasonable assurance of a competent high command? The only adequate step is the replacement of the entire Joint Staff system with a Prussian-model general staff.

Some have attempted to portray a general staff as a system that vests all power in one individual. But that is not what the Prussian general staff was all about. That did occur under General Erich von Ludendorff in the 1916-18 period, but it was a result of a vacuum at the top caused by the personal weakness of Kaiser Wilhelm II (it has well been said that Hitler listened to his generals too little; the Kaiser to his too much).

To understand the essence of the Prussian general staff, it is necessary to look at its origin in the Scharnhorst reforms that followed Prussia's disastrous defeat by Napoleon in 1806. Scharnhorst and his fellow military reformers—who were political liberals, not reactionary Junkers—were faced with the task of creating enduring military excellence within the framework of civilian control of the military, in the person of the King of Prussia. They attempted to create, not a new command structure for the Prussian army, but a system to provide the best possible military *advice* to commanders at all levels. The general staff was an advisory system, not a command system. That is, of course, exactly what we need from any replacement for the Joint Staff system: the best possible advice to the civilians who hold the ultimate military

authority, the President and the Secretary of Defense.

The Prussian general staff was what is called a "socialized," rather than a bureaucratic, organization. Its socialization centered on three characteristics. The first was very careful selection and education of staff officers. General staff officers were selected young, usually at the rank of captain, before the bureaucratic mindset had time to develop. The selection process was extremely rigorous, with only about 1 percent of those who attempted to become general staff officers finally making the grade. The general staff was kept very small to ensure quality and prevent bureaucracy: even at the Wehrmacht's peak strength in World War II, there were fewer than 1000 general staff officers. The education process was long and thorough, with emphasis on how to think, not what to think, and on the military art, not management and formats. General staff officers also periodically returned to field units to ensure that they did not forget the realities of the field.



The second major characteristic of the Prussian general staff was that once an officer was accepted by the general staff, he was a general staff officer for life. His promotion was controlled by the general staff, not by the branch from which he came. This situation gave him license to be objective. It contrasts strongly with the JCS system, where the officer must return from Joint Staff duty to his service and branch, which has ample opportunity to destroy his career if he was not perceived as a faithful "water carrier" in his Joint Staff job. Only permanent general staff status can protect the officer who dares to cross the service's parochial interests.

The third major characteristic of the general staff was an internal atmosphere that stressed frankness, imagination, and innovation. Prussian general staff officers were generally men of strong character, and if this meant that a good number of them were also somewhat eccentric, that was no handicap. At one point, General Helmuth von Moltke actually directed recruitment of eccentrics and oddballs on the grounds that they usually came up with the best ideas. The emphasis on frankness was very strong. A general staff officer had not only a right but a duty to be direct with his superiors. He was expected to give them his full and honest opinions and advice, whether they asked for them or not. In a bureaucratic system such as JCS, frankness is frowned on, because it reveals all the comfortable intra-institutional tradeoffs for what they usually are: detriments to national security.

It is these three characteristics that made the Prussian general staff so effective, and they are what those who want a general staff here seek to emulate. Naturally, an American general staff would not be an exact copy of the Prussian. The Prussian/German general staff was exclusively an army staff, and, at least in World War II, did not extend to the highest command level. An American general staff would be all-service and would extend to the highest level. The German general staff was oriented exclusively toward tactics and operations, leaving German strategy and grand strategy disastrously adrift in both world wars. Our general staff would also have responsibilities at the strategic and grand strategic levels.

WHAT are the chances of replacing the Joint Chiefs of Staff with a general staff? The administration has shown no interest in JCS reform, so if anything is to be done, it

will have to done by Congress. Last year the House passed a JCS reform bill, but unfortunately it focused on changing the relationships among the Chairman, the other members of the JCS, and the Secretary of Defense, not on improving the quality of decisions and advice from the JCS. However, the Senate Armed Services Committee is currently doing a major study of JCS reform, and it appears as if that study will address the deficiencies within the JCS itself and suggest possible remedies, to include consideration of a general staff system. Despite major behind-the-scenes efforts by the Navy to derail the study, both the committee chairman, Senator Barry Goldwater, and the ranking Democrat, Senator Sam Nunn, appear determined to do a thorough job. If the Senate study presents an accurate picture of a general staff system and its potential advantages, it may at least lift the debate over a general staff out of the mythology of "Prussian militarism" in which it was imbedded by Allied propaganda during the world wars.

On the tactical and operational levels where it operated, the Prussian general staff did a remarkable job of producing military excellence for almost 150 years. If we are to break the pattern of failure that has characterized our military actions for the last thirty years, we need to do what the Prussians did: institutionalize military excellence. That can only be done by adopting a structure for our high command that reflects the basic characteristics of the Prussian general staff. It is time to give a general staff system the serious and objective consideration it merits.

Alexandria, Virginia

Note

1. See William S. Lind, "Report to the Congressional Military Reform Caucus: The Grenada Operation," 5 April 1984.

Them that's talking don't know; them that knows ain't sayin'.

Anonymous NCO

PERSPECTIVES ON LEADERSHIP

THE HONORABLE VERNE ORR
SECRETARY OF THE AIR FORCE

IS a leader born, or is he made? Over 200 years ago Voltaire said:

> The right of commandship is no longer an advantage transmitted by nature. Like an inheritance, it is the fruit of labors, the price of courage.

Some people are fortunate enough to be born with traits that encourage other people to follow them, and many people will call them leaders. But these types of people are few. The rest of us can, nonetheless, become great leaders by studying the actions of successful leaders and, as Voltaire stated, by working to develop leadership capacity by "the fruit of labors."

Leadership Characteristics

Are there particular personality traits or qualities leaders have in common? This question reminds me of the alumnus who visited his

alma mater and was surprised to see that the questions on the exams were the same he had answered years before. When he asked his old professor about it, the professor replied: "Of course they are. The questions never change; only the answers."

So it is with personality traits and qualities. The question is always the same: What makes a great leader? But the answers change. Indeed, generations of research have failed to isolate one personality trait or set of qualities that can be used to discriminate between leaders and nonleaders. No matter how hard we try to isolate these traits, there will always be successful leaders who don't possess them.

I don't mean to say, however, that leaders have no characteristics in common. They do. A few are worth reviewing because they can be cultivated.

• Most leaders have a keen interest in other people. They work at developing it. Those who work for you expect or hope that you have it. Expressing interest in others is a great way of getting others to develop an interest in you and what you want to do.

• Most leaders are not afraid to take risks and make mistakes. Peter Drucker wrote: "Performance is not hitting the bull's-eye at every shot. That is a circus act that can be maintained only for a few minutes." A good performance record will include mistakes; it will include failures; it will reveal a person's limitations as well as his strengths. The better leader the person is, the more mistakes he is likely to make because the more things he will try and, consequently, the more he will learn. The key is to not make the same mistake twice. The leader to mistrust is the one who never makes a mistake, never commits a blunder, never fails in what he is trying to do. He is either a phoney or a person who stays in the safety of the "tried and the trivial." Good judgment comes from experience. However, experience often comes from bad judgment. A good leader won't be afraid to fail. If he never tries, he'll never fail, but he'll never be successful either.

• Most leaders cultivate loyalty among their followers by being loyal to them. Loyalty begets loyalty. Arthur W. Newcomb points out:

> Show me the leader and I will know his men. Show me the men and I will know their leader. Therefore, to have loyal, efficient employees, be a loyal, efficient employer.

During the years that I have worked for Ronald Reagan, I discovered that one of his outstanding characteristics is his loyalty. In California, I worked for him as director of finance and made mistakes, as we all do. I have seen him appear before a press conference where a reporter would say, "Verne Orr made a mistake." Now Ronald Reagan would never agree that Verne Orr made a mistake. What he said was, "If I had the facts Mr. Orr had when he made that decision, I would have made the same decision." That's why President Reagan commands such tremendous loyalty. He earned it. He gave it first.

Leadership Styles

I've observed two basic styles of leadership in the armed forces. One is the leadership of fear; the other is the leadership of encouragement. Both styles can be effective. I've seen four-star generals land at the end of the ramp and cause everyone's heart to triple-beat because they knew they were going to be chewed out for something. I know many in the Air Force have served under this style of leadership. It works. It certainly keeps an organization on its toes. My preference is the other style—the more laid-back style in which everyone works together in the confidence of camaraderie to solve problems and get things done. I think that it can be more effective.

While both styles work, let me caution you not to mix them. If a leader commands through fear and wants people to tremble and be on their toes, then he shouldn't think that he can approach someone, put his hand on the person's shoulder, and ask about the spouse and children. The employee will be suspicious and

mistrustful. Likewise, the leader who leads through camaraderie and encouragement can't count on responses if he suddenly turns bitter and begins dressing people down. His loyalty to his subordinates will be at risk. A leader should be consistent in his approach.

Leadership and Organization

A good leader can lead regardless of the structure of his organization. There is a current proposal circulating that says that if we will only give more power to the Chairman of the Joint Chiefs of Staff (JCS), we can end interservice rivalry and become more effective in our military planning and programming. Faults, if any, lie less in the organization than with the individuals; we can't blame the organization for an individual's faults. Good leaders can make any organization work; by the same token, poor leaders will be inept and unsuccessful regardless of the organization's structure. This JCS is working well and is effective. Far-reaching interservice Memorandums of Understanding (MOU) have been signed between the Air Force and the Army and between the Air Force and the Navy, which streamline our interservice cooperation and reduce overlap and duplication. The CINCs are being included early in the Program Objective Memorandum (POM) development process to ensure that the resulting product considers their high-priority needs. The JCS organization is developing the ability to provide joint analysis and recommendations for service POM development. These improvements are occurring in the present JCS structure, *without reorganization*. Their success is a function of leadership.

So we don't need reorganization; we need leaders committed to interservice cooperation, which we have. I recently read a report on JCS reorganization by Admiral Thomas H. Moorer, former Chairman of the JCS, and agree with his assessment: More power a good chairman doesn't need and a poor chairman shouldn't have.

Future Challenges

What are some of the challenges that leaders will face as commanders?

First, our people and their quality of life will be the most persistent challenge. We are faced with a declining number of military-age people, yet our systems remain manpower-intensive. How shall we make up the deficit? Are we overspecializing our support troops, making them more and more qualified to do fewer and fewer tasks? The Egyptians tell me that when one of their French-manufactured Mirages has a serious malfunction, the French send out two or three technicians to fix it. When one of our aircraft breaks down, we send out a team of twelve to fifteen specialists to fix it. Can we train more "generalist" support troops? If we train them, can we keep them in the service? We face tough competition now from private industry, and the perception is growing that many of the benefits of military service are eroding—retirement and pay comparability, in particular.

The second challenge will be to train combat leaders. The nature of warfare is changing as technology becomes more advanced; if we must fight a war, it is not likely to be like those we have already fought. Moreover, our combat-experienced leaders are beginning to retire; if we go to war, it may be with leaders having little or no combat experience. Will a master's degree in business administration, management, or even engineering guarantee a good combat leader?

A third challenge to leadership will be to make sure that our military doctrine keeps pace with the evolving threat. We need only to go back in history to illustrate that we must never again prepare to fight "the last war." Future warfare may not even exist in the traditional sense. It may be nothing more than well-organized and coordinated terrorism, perpetrated by highly dedicated and heavily armed terrorists on a mass scale. Does our current military doctrine accommodate this new threat? I think not.

Finally, leaders will be challenged to institutionalize innovation. Our greatest strength now is the quality of our people. They always have good ideas. We do better than anyone in educating them but may not do well afterward in encouraging them to be innovative. Henry Kissinger may have had this problem in mind when he wrote: "One of the paradoxes of an increasingly specialized bureaucratized society is that the qualities rewarded in the rise to eminence are less and less the qualities required once eminence is reached."

Perhaps our military organization has moved too far toward conformity. Some of our best ideas come from the first level of supervision, but many of them die there, no doubt because they threaten the stability and security of established supervisors. While change for change's sake may be dangerous, the greater danger is in refusal to accept change.

AN early edition of *The Officer's Guide* states:

> Inferior numbers and inferior material, coupled with superior leadership, may always be counted upon to win against superior numbers, superior material, and inferior leadership.

This truism has been proved over and over throughout history and reinforces our commitment today to strong leadership qualities. We can improve leadership by studying other successful leaders and by practicing, and we must do that to guarantee our children that the world's best leaders will safeguard their national security.

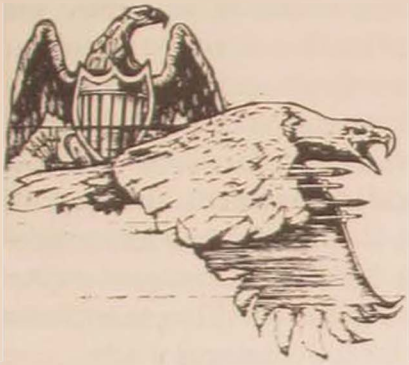
Washington, D.C.

Mankind admire most the hero; of all, the most useless, except when the safety of a nation demands his saving arm.

"Light-Horse Harry" Lee, quoted in Douglas Southall Freeman, *Robert E. Lee: A Biography*, I, p. 65

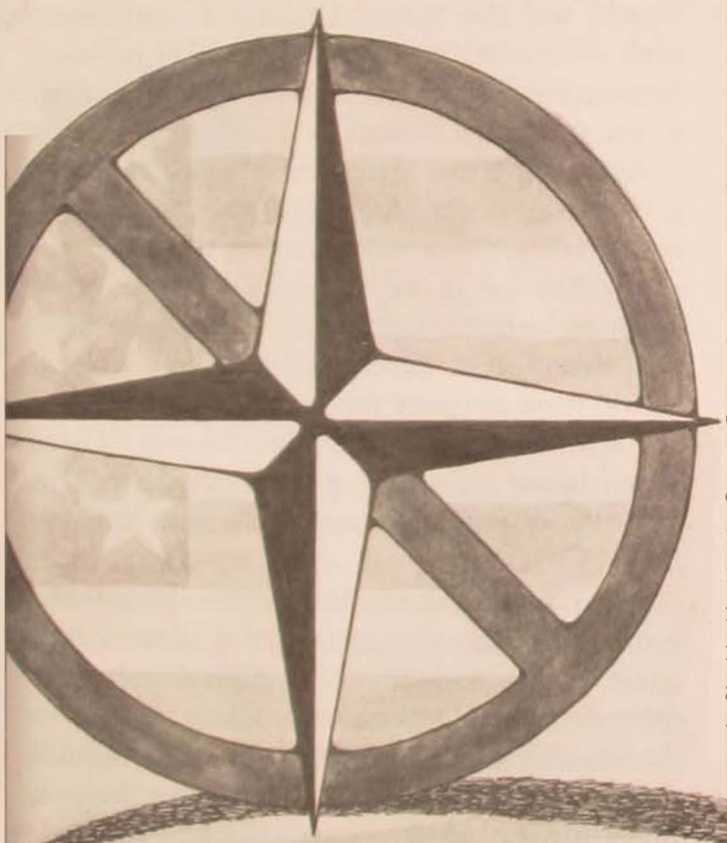
DEFENDING EUROPE CONVENTIONALLY: AN AMERICAN PERSPECTIVE ON NEEDED REFORMS

DR. JEFFREY RECORD



FROM the American vantage point, any discussion of Europe's defense is guided by the premise that Europe's defense, vital though it is to the United States, can never be as important to Americans as it is, or at least ought to be, to Europeans. For Americans, Europe is not home; and for American force planners, the North Atlantic Treaty Organization is but one of several demanding overseas military commitments. Moreover, geography continues to discourage a complete unity of American and European strategic interests. There is no Group of Soviet Forces Canada or Mexico hovering along America's borders, and if one has to fight, it is always better to do so on someone else's territory. It is thus in the strategic interest of the United States to confine any war in Europe to that continent.

How to defend Western Europe without resorting to nuclear fire has been a major preoccupation of NATO force planners ever since the early 1960s, when the Soviet Union acquired the ability to strike the American homeland with nuclear weapons. The development of viable conventional defenses became all the more imperative in the 1970s as the Soviet Union achieved a rough parity in intercontinental nuclear weapons, gained a pronounced superiority in so-called theater nuclear weapons, and continued to expand its long-standing advantage over NATO in conventional forces.



Yet here we are, in the middle of the 1980s, with conventional defenses, according to the testimony of NATO's own supreme commander, inadequate to hold against a major Warsaw Pact attack for more than a few days without the use of nuclear weapons which, given the altered nuclear balance, would be self-defeating and probably suicidal. Flexible response has been a dead letter ever since its official adoption by NATO because the alliance has steadfastly refused to act effectively on the military implications of the loss of American nuclear superiority. That loss dictated the creation of a truly viable conventional leg of the NATO triad, which, in turn, required a willingness to think beyond deterrence. Neither has been forthcoming.

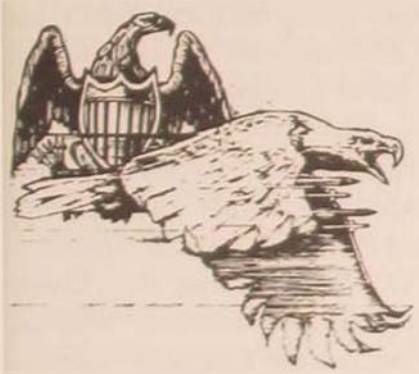
What we have today is instead a continuing nostalgia, at least in Europe, for the good old days of massive retaliation, coupled with something called forward defense, which boils down to a linear defense far more vulnerable than André Maginot's original version. If the Maginot Line lacked sufficient operational reserves behind it, it at least had fortifications. NATO's forward defense has neither. To put it another way, what we have today in the way of conventional defenses is about what we had in the era of massive retaliation, although many refuse to admit it: a nuclear tripwire.

It was this conclusion that prompted submission of the Nunn Amendment before the United States Senate in 1984. While that amendment angered many in Europe, the logic behind the amendment remains unassailable. If the alliance remains unwilling to muster the conventional force wherewithal required to avoid an early first-use of nuclear weapons in the event of war, then U.S. ground forces in Europe sufficient to trip the nuclear wire need not be as large or as costly as they are now. The wire could as easily be tripped by 200,000 or even 150,000 U.S. troops in Europe as by 250,000. Indeed, the fewer the better, since the refusal of key allies to stockpile enough ammunition for more than a few days or weeks of combat and to provide needed shelters for reinforcing U.S. aircraft would condemn U.S. troops in Europe, whatever their number, to probable defeat or destruction. Although Europe's defense consumes more than one-half of the American defense budget, the United States has never been in a position to defend Europe in the absence of sufficient allied investment.

The only intellectual deficiency of the Nunn Amendment, which may well be resubmitted in 1985, is a deficiency common to almost all promptings and plans for improved conventional defenses—namely, an underlying assumption that more effective conventional defenses would raise the nuclear threshold. This assumption is not at all self-evident, at least with respect to a Soviet Union that had already decided on war in Europe. NATO's own doctrine of nuclear first-use reflects a willingness to substitute nuclear fire for conventional inadequacy. Would not the Soviet Union, if confronted with otherwise unbreachable NATO forward conventional defenses, also be sorely tempted to use nuclear weapons as a means of swiftly overcoming those defenses? While it can be persuasively argued that improved NATO conventional defenses would reduce the *chance* of war in Europe, it can also be argued that such defenses, by diminishing Soviet force planners' confidence in a quick conventional victory, would serve to lower the nuclear threshold for the Warsaw Pact in the *event* of war. There have always been two nuclear thresholds in Europe, one for NATO and one for the Warsaw Pact.

None of this line of thought is to belittle the continuing deterrent power of nuclear weapons, even in the absence of credible nonnuclear defenses. More than any other factor external to the Soviet Union, it has been the very presence of thousands of American nuclear weapons on European soil that has kept the peace in Europe. Even were NATO to renounce its longstanding doctrine of nuclear first-use, it is doubtful that the most unregenerate of hawks in the Kremlin would feel appreciably more inclined to opt for war in the event of a crisis.

The Soviet military is nothing if not Clausewitzian in its appreciation of war's friction and inherent unpredictability. Could the Group of Soviet Forces Germany make it to the English Channel ports without someone, somewhere, first-use doctrine or no, firing off at least a few of NATO's 6000 tactical nuclear weapons, thereby sparking uncontrollable events that could lead to mutual suicide? One is tempted to ask those who would denuclearize Europe, for centuries a cauldron of interstate violence and the cockpit of both world wars, to explain four decades of peace in a place where the density of nuclear weapons is greater than anywhere else in the world. They might also explain the absence of any kind of war—nuclear or nonnuclear—between the United States and the Soviet Union, which possess the largest arsenals of nuclear weapons.



With respect to the present debate within the alliance over how best to improve NATO's conventional defenses, the first question to be addressed is whether Western Europe is in fact conventionally defensible against a large and determined Warsaw Pact assault. If, as most denuclearization advocates believe, Western Europe is militarily defensible without a resort to nuclear fire, then the next question is: Is a viable conventional defense politically feasible? Within the Atlantic alliance, there has always been an uneasy, and at times bitterly antagonistic, relationship between the militarily desirable and the politically acceptable. Indeed, the history of NATO's conventional defenses since the adoption of flexible response has been for the most part a history of the subordination of military imperatives to political considerations—an inability to reconcile deterrence and defense. Such a situation might be tolerable if NATO enjoyed the major strategic, operational, and geographic advantages over its potential adversary that the Warsaw Pact enjoys.

There is first the Warsaw Pact's numerical superiority in both standing forces and forces readily available upon mobilization. What makes this superiority potentially decisive is a second advantage, geography. Unlike NATO, which is bifurcated by 3000 miles of water, the Warsaw Pact is a compact, contiguous alliance whose principal member and source of reinforcement—the Soviet Union—enjoys comparatively short land lines of communication with Central Europe.

Even shorter are the distances that Soviet forces would have to cover to gain a decisive victory. NATO Center lacks great depth, which, operationally, means that it lacks the ability to trade a lot of space for a lot of time. Yet the history of modern, mechanized warfare has shown that, in the absence of barrier defenses, both the capacity and willingness of a defender to trade space for time is essential in defeating an attack preceded by little warning and characterized by rapid, deep thrusts of large concentrations of armor. The success of the German blitzkriegs of 1939 and 1940 against the relatively shallow states of Central and Western Europe could not be repeated in the vast expanses of Russia against an opponent able and prepared to retreat over a thousand kilometers. However, the distance from the inter-German border to Antwerp is less than 500 kilometers (and from the border to the Rhine, less than 300), and NATO has not seen fit to erect barrier defenses worth the name.

To these numerical and geographic advantages must be added the inestimable operational advantages associated with the initiation of hostilities. By virtue of its purely defen-

sive strategy, NATO has ceded to the Warsaw Pact the choice of time and place. While not for a moment suggesting that NATO should adopt an offensive or preemptive strategy, one would not be imprudent in stating that the operational penalties of its present posture must be recognized. Against an intended victim lacking barrier defenses and robust operational reserves, an attacker that achieves surprise need not possess any margin of numerical superiority, to say nothing of the mythological 3:1 advantage. Moreover, modern military technology and operational doctrines have increased the traditional military benefits of surprise attack against an unready defender. A mobilization command structure that relies confidently on the ability of sophisticated surveillance technologies to provide early, unambiguous warning of an impending blow ignores major improvements in means of deception that might well render it a victim of surprise.

Also ignored by Western strategists is perhaps the weakest link in the entire chain of NATO's conventional defenses—namely, the lack of any assurance that political decision makers will act effectively in time, or even act at all, on whatever warning is received. Unlike the Warsaw Pact, which is an alliance of forced and enforced loyalty, NATO is a voluntary organization of sovereign, democratic states. As such, it lacks both the military commonality and the political cohesion of the Warsaw Pact. And given recent events in Western Europe, including the capture of both the British Labour and German Social Democratic parties by political movements hostile to the United States, to nuclear weapons, and even to the very idea of NATO, the possibility of political paralysis in time of crisis cannot be dismissed. One can envisage some political leaders in Europe refusing to agree on such indispensable crisis measures as the dispersion of nuclear warheads and the movement of ground forces to their general defensive positions. Such actions, they will argue, are provocative and could spark the very war we are trying to prevent; never mind that the Russians have already moved the Group of Soviet Forces Germany out of garrison, that they have called up Category II and III divisions inside the Soviet Union, and that they have sent most of their submarines to sea. Thus, the continuing debate over how much warning NATO will have of an impending Warsaw Pact military move misses the point. Even six months' warning would count for nothing if NATO disintegrated politically.

To be sure, the Soviet Union, too, would be plagued by a number of political and military disadvantages in a violent contest for Europe. However, some of those disadvantages have been grossly overstated, while others probably would prove irrelevant to the outcome of a NATO-Warsaw Pact war. It is said, for example, that some of Moscow's East European allies are politically unreliable and that the Soviet Union could not count on them to provide assured political and military support for an attack against Western Europe. This may well be true, but it also may well be inconsequential. It can be argued that the Soviet forces deployed in Europe and readily available for combat in the theater are alone sufficient to overwhelm NATO's defenses and that, therefore, the only wartime tasks Moscow need ask of its allies are the purely defensive ones of parrying potential NATO counterattacks on East European territory and of maintaining secure lines of communications for Soviet forces passing through Eastern Europe.

It is also said that the Soviet Union lacks unconstrained access to high seas. There can be no doubt on this point. The very geography that works to the Soviet Union's benefit in a land war on the Eurasian landmass has conspired to place the Soviet Union at a distinct disadvantage in a naval war with the West. The question is whether the outcome of the struggle at sea would be decisive in determining Europe's fate in the event of war. Let us assume that on the first day of hostilities NATO succeeded in sweeping every Soviet ship from the

high seas and in demolishing all Soviet home and overseas naval bases. Would this prevent the Soviet army from overrunning Europe? For the Soviet Union, whose war economy and ability to conduct military operations in Europe are not dependent on maritime communications, sea power is a luxury, not a strategic imperative. Indeed, Admiral S. G. Gorshkov's transformation of the Soviet navy from a coastal appendage of the land battle into a powerful "blue water" force may be regarded as an inherently unnatural development, as was Admiral Tirpitz's creation of a German High Seas Fleet in the decades before World War I. The Soviet Union, like Wilhelmenian Germany, is a continental power with continental military experiences and traditions, and it possesses none of what Alfred Thayer Mahan defined as the basic elements of sea power, including geographical position.

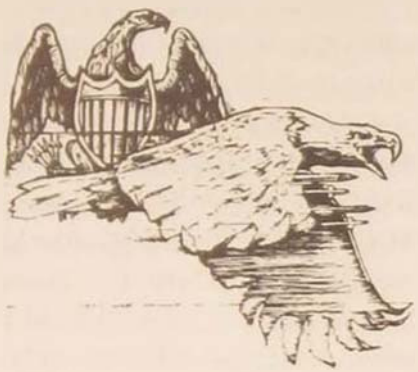
It is further said, although less so now than in the past, that the Soviet Union is technologically inferior and that its inferiority deflates the significance of its numerical advantage. To be sure, the Soviet Union does lag behind the West in a number of military technologies, including some of the so-called emerging technologies related to "smart" area and precision-guided munitions, sensors and other long-range surveillance and target-acquisition devices, and advanced data-processing and information distribution systems. On balance, however, the Soviet Union during the past two decades has managed to eliminate, and in some cases surpass, the West's qualitative lead in most of the technologies critical to both the land and tactical air battle. Far more significant has been the Soviet Union's success in doing so without an enormous sacrifice in numbers of deployed systems. Unlike NATO, the Soviet Union, with its proportionally far greater investment in things military, has not permitted quality to become the enemy of quantity.

What conclusion can one draw from these multiple circumstances? Namely, that any discussion of how best to improve NATO's conventional defenses must be predicated on recognition that the alliance would enter a conflict in Europe profoundly (though by no means hopelessly) disadvantaged and that those disadvantages—political and military—are not even remotely offset by the disadvantages, real or imagined, attributed to the Warsaw Pact.

BEFORE one addresses the question of what measures are necessary to provide reasonable credibility to NATO conventional defenses, it is important to recognize what is not essential. Take, for example, the Rogers Plan for follow-on force attack, which not only is of doubtful operational validity and political feasibility but also fails to address the most serious operational deficiencies in NATO's present conventional defenses. Those deficiencies are: lack of barrier defenses along the inter-German border; lack of sufficient operational reserves; lack of sufficient war reserve stocks of ammunition, spares, and other combat consumables; and lack, on the part of SACEUR, of prehostilities mobilization authority commensurate with his responsibilities.

None of the premises on which the Rogers Plan rests are self-evident. Many are questionable, and some are just plain wrong. For example, the plan presumes that NATO has, or would be willing to create, the necessary conventional military wherewithal to engage the pact's initial attacking forces and follow-on echelons effectively and simultaneously. To be sure, collectively NATO possesses an economic, industrial, and technological base sufficient, at least on paper, to mount concurrent and successful attacks on the pact's first and follow-on echelons. But the real issue is a political one, resource allocation. The alliance has never chosen to devote resources to the military sufficient to stop the pact's first echelon, to say nothing of decisively engaging follow-on echelons; and, if present defense budgetary trends are indicative, NATO is not likely to do so in

the future. Given the current and likely future political constraints on the actual military resources made available to the alliance, strategic and operational choices must be made, and NATO cannot afford to disperse its finite forces over too many objectives. This disparity between assets and ends means, in short, that top or perhaps sole priority must be accorded to defeating the first echelon.



This is not to suggest that NATO refrain altogether from striking targets in Eastern Europe: aerial strikes across the inter-German border have always been a feature of U.S. and NATO war plans for Europe's defense. It is only to argue that choices cannot be avoided between the immediate defense of German territory and the engagement of more distant pact follow-on forces. To put it another way, it is unreasonable to expect annual real increases in national defense expenditure of 6 to 7 percent (the cost, according to General Rogers, of implementing his plan) from alliance members who have failed to honor past pledges of 3 percent.

The heart of the follow-on force attack concept is its operational presumption that the success of a Warsaw Pact offensive against NATO Center hinges on the timely arrival intact of follow-on forces in the battle area—on a delicate, exacting, and complex plethora of timetables and programmed march rates reminiscent of the inflexible and overcentralized Schlieffen Plan of 1914. However, many observers question this portrayal of Soviet ground force offensive doctrine, claiming that it reflects a fundamental misinterpretation of the nature of the problem and of recent Soviet force improvements which suggest a declining operational significance of follow-on echelons. In any event, the stacking of follow-on Soviet echelons behind forces initially committed to the attack presupposes the inability of first-echelon forces to achieve a decisive breakthrough, a presupposition that would seem at odds with General Rogers' own gloomy assessment of NATO's initial conventional force sustainability.

A second and no less suspect, if admittedly implicit, operational premise of the Rogers Plan is that effective countermeasures to follow-on force attack are either unavailable to the Soviets or, if available, very unlikely to be adopted, due to assumed rigidities in Soviet theater force doctrine and structure. A recent major study conducted at the U.S. National War College concluded, however, that a host of effective potential countermeasures to the Rogers Plan are available to the Soviets and that the Soviets are in some cases moving toward their implementation. Countermeasures identified by the study include increasing the combat power of the first echelon either by reallocating units from the follow-on echelons or by increasing the strength of existing first-echelon units across the board; decreasing the time required to commit follow-on echelon forces, improving counterair capabilities or the ability to interrupt air-ground coordination through physical and electronic attacks on C^3I systems; and preparing the battlefield to facilitate rapid movement forward, support of forward echelons, defense of the rear area, and quick recovery from interdiction via such measures as forward deployment of additional engineer units and prepositioned bridging and road construction equipment and supplies.

Indeed, the Soviets have for years been increasing the combat power of their first-echelon forces in Eastern Europe, notably the Group of Soviet Forces Germany, while the recent devel-

opment of the so-called Operational Maneuver Group and its associated doctrine suggests that they are also attempting to decrease the amount of time required to commit second-echelon forces. Additional countermeasures available to the Soviets include heightened investment in decoys, flares, chaff, aerosols, and other items designed to deceive and confuse NATO sensors and other target acquisition devices, as well as electronic jamming, spoofing, and other actions designed to impede, disrupt, or block the flow of real-time information critical to timely NATO strikes, especially on moving targets. The Soviets have long been masters of battlefield deception, and a properly devised large-scale deception could completely destroy the integrity of the computer-based intelligence system on which NATO's follow-on force attack depends.

The Rogers Plan's third operational premise—that effective interdiction of pact follow-on forces can be accomplished by aerial (manned aircraft and missile) strikes alone—also is questionable. In many respects the plan is little more than the latest expression of the old forlorn hope of victory through air power. Past aerial interdiction campaigns, notably in Europe, Korea, and Vietnam, failed to achieve decisive results in the absence of attendant large-scale *offensive ground* operations; and their costs, in terms of munitions expended and lives and aircraft lost, have often exceeded, and in some cases vastly so, both the monetary and operational value of targets destroyed. For example, during the air interdiction campaign in Vietnam known as Rolling Thunder, the United States destroyed targets estimated at less than $1 billion in value at the cost of $6 billion worth of lost aircraft. More to the point, an aerial campaign against pact follow-on forces in Eastern Europe is likely to encounter air defenses far more formidable than those of North Vietnam in the 1960s and early 1970s.

Even the eventual substitution of ballistic and cruise missiles for manned aircraft as the principal means of carrying out the Rogers Plan promises no significant alteration in the dismal cost-benefit ratios characteristic of most past air interdiction campaigns. Missiles are individually cheaper and would possess far greater system survivability than aircraft in the hostile air defense environment of Eastern Europe; but their lack of reusability would compel their purchase in greater numbers to cover the same target array, and the unit cost of their advanced conventional munitions is expected to far exceed the cost of current munitions carried by manned aircraft.

If the strategic and operational premises of the Rogers Plan are questionable, so too is its political feasibility. Despite the adoption of the follow-on force attack concept by the NATO Defense Planning Committee in 1984, many Europeans question its operational desirability and validity, and most Allied governments have registered little willingness to undertake the substantial real annual increases in national defense expenditure deemed necessary by General Rogers himself to implement the plan. No less a political obstacle to the plan's implementation has been the absence to date of a doctrinal and "procurement" consensus within the U.S. military itself regarding the wisdom and affordability of the plan. Indeed, the U.S. Army's lukewarm response to the Rogers Plan may in the end prove the most formidable political obstacle to its adoption. The Army strongly objects to the plan's emphasis on striking distant rather than close-in targets as well as the plan's centralization of tactical air assets at the theater level, which the Army feels would deprive ground commanders of adequate and timely close air support. And neither the Army nor the U.S. Air Force, which endorses the plan at least in principle, has extended to the associated emerging technologies a preferential position in its respective procurement policy, despite strong pressures to do so by the Office of the Secretary of Defense and key members of the Senate Armed Services Committee. The Army's other military modernization programs, which entail the purchase of fourteen new systems,

including the M-1 tank, the Bradley fighting vehicle, and the AH-64 attack helicopter, have clear priority over the emerging technologies program. Similarly, such Air Force big-ticket procurement programs as the F-15, F-16, B-1, and MX programs enjoy a marked preference over emerging technologies. The Air Force also is reluctant to pour its limited resources into deep-strike technology, since many of these systems are designed ultimately to replace manned aircraft missions.

Nowhere is the lack of consensus between the Army and the Air Force on the follow-on force attack concept more evident than in the May 1984 written memorandum of understanding in which the two services, ignoring strong OSD and congressional encouragement, agreed to disagree on the development of a number of joint hardware systems regarded as essential to make the concept a reality. The project to develop a joint tactical missile system carrying a submunitions dispenser for both the Air Force and the Army was shelved because neither service could agree on the missile's specifications: the Air Force favored a smaller air-launched version, while the Army preferred a longer-range weapon based on the existing Lance. The two services also agreed to disagree on the type of aircraft to carry the indicator radar controlling the system: the Air Force favored modified Boeing 707-323C transports, while the Army wanted a much smaller aircraft such as the OV-1D Mohawk. Another casualty of the so-called AirLand Accord was the highly touted assault breaker program, a high-tech stand-off scheme for interdicting second-echelon Warsaw Pact armor. Aside from technological problems encountered in the program, joint Army-Air Force analyses concluded that it would take a force of some 8000 conventionally armed missiles a week just to cover a single pact corps front, with a price tag of approximately $8 billion.

European critics of the Rogers Plan are correct in asserting that the United States needs to get its act together as a prerequisite for any hope of implementing the plan. But there appears to be little prospect that the United States will do so; competing demands on service resources as well as the differing operational requirements confronting the U.S. Army and Air Force in Europe have so far blocked the necessary consensus.

Underlying these political reservations about the Rogers Plan are serious doubts about its technological feasibility and cost. The history of high-technology, "smart" weapons has been a history of cost overruns and of often disappointed expectations in terms of actual operational effectiveness. The ultimate performance of many follow-on force attack technologies remains clouded by technical and budgetary uncertainties, and it can be argued that the Rogers Plan is excessively dependent on complex technologies of questionable operational effectiveness and maintainability in the stress and chaos of actual combat. As for the costs of procuring those technologies, estimates range from $10 to $30 billion. If experience is any guide, however, these estimates will rise not by percentages but by multiples.

Even if the Rogers Plan were feasible, however, it would still be subject to condemnation on the grounds that it seeks a solution to the wrong problem. It is the Warsaw Pact's high-quality and *already* reinforced first-echelon forces, not its more distant and less capable follow-on forces, that would most threaten NATO's political and military integrity in the event of war. What good would it do to defeat the pact's second-echelon in Eastern Europe while losing to its first-echelon in Western Europe?

To defeat the Warsaw Pact's first-echelon forces, at least four alterations in NATO's present conventional defense posture are required, all but one of them notable for their absence in the Rogers Plan's scheme of operations. The first is fortification. The creation of barrier defenses along the inter-German

border—employing bunkers, tank traps, mines, explosives prechambered in bridges or along key defiles, afforestation, and a more deliberate orchestration of NATO's numerous water obstacles—would serve to canalize and retard the momentum of a Warsaw Pact attack. In so doing, barrier defenses would enhance target acquisition and, more important, buy time necessary to form up operational reserves for the purpose of counterattacking breakthroughs. Additionally, because barrier defenses could be manned by reserve units and territorial forces, they would contribute directly to the formation of operational reserves by freeing at least some of those mobile, first-line, and comparatively costly NATO forces now allocated to the inter-German border's forward defense. Given the Warsaw Pact's possession of both the initiative and numerical superiority, the issue is not whether first-echelon pact forces could breach NATO's forward defenses, even forward defenses augmented by barriers, but rather whether, when, and where inevitable penetrations could be halted and subsequently eliminated. Even the Mannerheim Line, a model of what forward defense ought to be, was ultimately breached, although it took the Russians six months and staggering losses to do so.

The question may well be asked as to why NATO has refused to do something so militarily beneficial as to construct barrier defenses. The answer is, as usual, political. Even though proper barrier defenses could be had for far less cost than the Rogers Plan, and even though they might mean the difference between victory and defeat in wartime, Bonn has opposed them on the grounds that fortifications along the inter-German border would somehow encourage the permanent division of Germany. This argument is mystifying, at least to many Americans. Has not the Federal Republic of Germany already recognized the German Democratic Republic as a separate, independent, and politically sovereign state? Is not the German Democratic Republic a member of a military alliance that poses the greatest threat to the Federal Republic's own independence? Has not the German Democratic Republic fortified its own side of the border? And are the consequences of French fear of offending the Belgians by extending the Maginot Line along the Franco-Belgian border to be forgotten?

The second measure required to confer credibility on NATO's conventional defenses is related to the first: more operational reserves, the lack of which many observers regard as NATO's gravest military weakness. Barrier defenses are one means of increasing the alliance's operational reserves, but there are others. David Greenwood has proposed replacing the current, front-loaded "layer cake" of national force dispositions with a "piano keyboard" disposition that would withhold larger forces farther back. Steven Canby has called for a more effective utilization of NATO Europe's vast pool of trained military manpower no longer on full-time active duty. Again, the point must be made that the goal is not an impregnable forward defense of the inter-German border, which is impossible even with barrier defenses and plentiful operational reserves. The objective is rather a successful defense of Western Europe as a whole, including Germany. To attempt to defend every square meter of Germany, irrespective of overriding operational considerations, is to lose every square meter of Germany.

A third prerequisite for any effective conventional defense is, of course, sufficient war reserve stocks of ammunition and spares. Any scheme of defense, be it follow-on force attack, a linear defense, or a modified defense in depth, is by definition doomed to defeat if the defender runs out of ammunition before the attacker. Although the question of how much is enough is a matter of varying opinion (sixty days' supply would seem to be a prudent minimum), it is patently nonsensical for one country to stockpile forty-five or sixty days' worth while other key allies keep but a week or two's worth on hand. This matter is admittedly a tired old issue, but it cannot be simply wished away

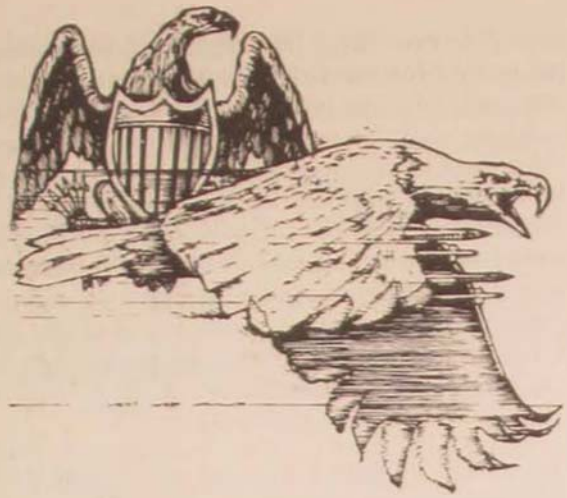
through inaction and unfulfilled promises. The history of modern warfare has been a history of shell shortages.

Finally, there can be no confidence in an effective conventional defense of Western Europe if, in a crisis, those responsible for that defense are denied authority to undertake essential preparatory measures. This is not for a moment to suggest that SACEUR or any NATO military body be granted de jure or de facto authority to plunge Europe once again into war. No one wishes to return to the summer of 1914. Simple prudence, however, argues strongly for giving SACEUR more authority than he now has to undertake certain prehostility military measures in the face of an impending Warsaw Pact attack. Such measures would include dispersal of nuclear weapons and tactical aircraft, movement of ground forces out of garrison to their general defensive positions, call-up of certain categories of reservists, and commandeering of selected civilian resources.

It might be added parenthetically that judgment of hostilities as likely or imminent is as much a military decision as a political one. And it can be argued that SACEUR, by virtue of his already transnational military role and limited mobilization authority, represents a far more reliable and effective repository for making certain critical preparatory *military* decisions during a crisis than the present collection of more than a dozen sovereign political authorities who find consensus difficult in times of peace. May it be further added, to dispel suspicions that endowing SACEUR with greater authority would lead to greater American influence within the Atlantic alliance, that there is nothing sacrosanct about the notion that SACEUR should always be an American. Indeed, were France to resume military participation in NATO, one could even envisage a French SACEUR.

THE time is long overdue for NATO to face—and to act effectively on—the unpleasant reality that conventional deterrence and defense are inseparable under conditions of nuclear parity. Conventional force deficiencies that were tolerable in the days of pronounced nuclear superiority are no longer so. At this stage in the history of the alliance, the only argument for tokenism is the one, now often heard in Europe, that the Soviet Union does not, if it ever really did, pose any military threat to Western Europe. If this argument is valid, however, there is no need for NATO itself.

Washington, D.C.



TACAIR MISSIONS AND THE FIRE SUPPORT COORDINATION LINE

LIEUTENANT GENERAL MERRILL A. MCPEAK

WE ARE at the threshold of a period of greatly increased joint effectiveness on the tactical battlefield. The work done principally by TAC and TRADOC[1] during the past several years has been crowned, in a sense, by the thirty-one initiatives of the two service chiefs.[2] As we begin to think about how to exploit the opportunities now presented for enhanced joint effectiveness, it may be useful to review the classic air-to-ground missions—air interdiction and close air support—in the context of their associated coordination mechanisms and control measures. While much remains the same, some very important recent changes have occurred, including, in my view, adjustments in our basic conceptual approach.

As an example of how our thinking has shifted, as recently as 1978, an experienced tactician, writing in this publication, could assert:

> The dividing line between close air support and interdiction has always been the fire support coordination line (FSCL) . . . .
>
> . . .Pact forces or "echelons" beyond the FSCL can be freely interdicted without the need for constant air-ground coordination. The Pact forces or "echelons" between the FSCL and the forward edge of the battle area (FEBA) can only be attacked within the framework of the close air support system and whatever coordination procedures and rules of engagement are operative within the system at that time. Separating close air support and interdiction operations on the battlefield is relatively simple.[3]

In my opinion, almost nothing in these quoted paragraphs is correct today. To understand why, we have to go back to basics.

Battlefield Control Measures

Ground forces use a variety of control measures, most of limited interest to the tactical aircrew involved in air-to-ground operations. For our purposes, only the FLOT, FEBA, and FSCL need elaboration.

The FLOT and FEBA are battlefield planning lines that describe the present position of friendly forces. *The Dictionary of Military and Associated Terms* (JCS Pub. 1) definitions are:

> *forward line of own troops* (FLOT)—A line that indicates the most forward positions of friendly forces in any kind of military operation at a specific time.
>
> *forward edge of the battle area* (FEBA)—The foremost limits of a series of areas in which ground combats units are deployed, excluding the areas in which the covering or screening

forces are operating, designated to coordinate fire support, the positioning of forces, or the maneuver of units.

Each ground maneuver unit establishes FLOT and FEBA lines to determine unit deployment. The FLOT encompasses all of the unit's people. Accordingly, the FLOT is likely to extend well beyond the location of the main body of friendly troops to incorporate screening or covering forces. On the other hand, the FEBA depicts the forward limits of the main battle area and specifically excludes the screening or covering force.

In today's doctrinal dialogue, one does not hear much discussion of the FEBA. Interest has shifted to the FLOT. In a 10 August 1981 memorandum to his commanding general, then Brigadier General McDonald Morelli of TRADOC described the Army's rationale for emphasizing the FLOT:

> The primary reason the US adopted FLOT in its AirLand Battle operational concepts stemmed from the change in the operational concept and mission of the Corps Covering Force, approved by General Starry several years ago. Essentially, when General Starry decided that the Covering Force would be the first echelon of defense and *fight* a major battle to force the enemy to deploy his main body, there was no way to depict a FEBA for this "battle area" and remain in consonance with approved NATO terms (NATO definition of FEBA excludes the covering force operations). General Starry decided to use FLOT since the Covering Force Battle was to be the baseline where he wanted the time lines established and the AirLand Battle to begin.[4]

In brief, today's baseline battlefield control measure is the FLOT.

According to JCS Pub. 1, the planning line most often linked with tactical air operations is the FSCL, defined as:

> *fire support coordination line* (FSCL)—A line established by the appropriate ground commander to insure coordination of fire that is not under his control but may affect current tactical operations. The fire support coordination line is used to coordinate fires of air, ground or sea weapon systems using any type of ammunition against surface targets. The fire support coordination line should follow well defined terrain features. The establishment of the fire support coordination line must be coordinated with the appropriate tactical air commander and other supporting elements. Supporting elements may attack targets forward of the fire support coordination line without prior coordination with the ground force commander, provided the attack will not produce adverse surface effects on, or to the rear of, the line. Attacks against surface targets behind this line must be coordinated with the appropriate ground force commander.[5]

The FSCL is based on and measured from the FLOT. Ideally, the FSCL should be placed as close to the FLOT as operational and safety considerations permit—say, about ten to fifteen kilometers. For reasons that we shall elaborate later, the FSCL is nearly always found at least twenty-five kilometers from the FLOT when operating with U.S. ground forces.

Historically, the FSCL is the lineal descendant—no pun intended—of the "no bomb line." Before the advent of accurate navigation aids and the current air-ground operations system, easily recognizable terrain features were used to separate the Army and Air Force portions of the battlefield. As one young Army author noted: "Given the problems of communications, coordination, and response time, rigid separation of Army and Air Force fires was the only way to attack targets while protecting our own troops."[6] We should not minimize these difficulties even today, but our focus now is on how to attack the target set jointly, rather than on a battlefield that is hived off into exclusive domains.

While the requirement to coordinate attacks inside the FSCL is clear, there is no JCS Pub. 1 definition of "coordinate." By way of general guidance, JCS Pub. 2, *Unified Action Armed Forces*, describes the coordination process:

> The commander of the supported force [will] indicate in detail to the supporting commander the support missions he wishes to have fulfilled and provide such information as is necessary for complete coordination of the supporting action with the action of his own force.

In other words, coordination during attack

planning seems not to require active involvement of the supporting force when that force is responding to the request of a supported force. Whatever "coordination" is, responsibility for doing it rests mainly with the commander seeking the action. In the case of fire support, the request specifies desired target and time over target. As a consequence, one could argue that the request itself embodies the requesting commander's coordination.[7]

To summarize, we are required to "coordinate" attacks inside the FSCL. The particulars of coordination are not well defined. And in the case of attacks requested by the ground commander, the request itself may be viewed as incorporating the required coordination.

TACAIR Missions

JCS Pub. 1 defines our principal air-to-ground missions as follows:

> *close air support*—Air action against hostile targets that are in close proximity to friendly forces and that require detailed integration of each air mission with the fire and movement of those forces.
>
> *air interdiction*—Air operations conducted to destroy, neutralize, or delay the enemy's military potential before it can be brought to bear effectively against friendly forces, at such distance from friendly forces that detailed integration of each air mission with the fire and movement of friendly forces is not required.

Note the absence of any reference to the FSCL. No form of the verb "to coordinate" is mentioned in either definition. As can be seen, what distinguishes close air support from air interdiction is the element of "close proximity," together with its associated requirement for "detailed integration"—not the question of where the mission is conducted relative to the FSCL, with its associated requirement for "coordination."[8] (Those who claim that we do only CAS inside the FSCL should advocate changing its name to fire support detailed integration line.)

As with "coordination," there is no agreed military definition of "detailed integration." In practice, "detailed integration" refers to a comprehensive planning and execution process that extends from target and munitions selection through weapons delivery and incorporates "coordination" as a part of the process. In essence, the ground commander chooses CAS targets, desired munitions effects, and attack timing. A tactical air control party (TACP)—notably the corps air support operations center (ASOC)—does detailed planning to integrate requested attacks with the ground maneuver scheme. Forward air controllers (FACs) communicate with air and ground mission commanders, providing terminal control while weapons delivery is performed.

Adding a final complexity to this vexing question of definitions, "close proximity" has no jointly agreed meaning. From an airman's viewpoint, when the position of friendly troops is known precisely, safety considerations argue for a nominal safe distance to account for delivery system accuracy and frag envelope—say, one to five kilometers. For the Army, "close proximity" is usually associated with the limits of observed fire. The distance at which ground fire can be observed will vary with circumstances, but a good working number is three to five kilometers. Thus, by most accountings, "close proximity" ends at some point well inside the FSCL.

The lack of precision in agreed definitions, especially that of "close proximity," increases the potential for confusion. The situation is certainly clarified if we take the view that, inside the FSCL, we do close air support exclusively and, outside the FSCL, we do air interdiction exclusively. Were this the case, the FSCL would constitute a *mission line*, rather than simply a coordination line. Indeed, such an arrangement would work well if the FSCL were to be placed in such a way that it could be used as a reasonable guide for "close proximity." However, this is very unlikely to happen, for a variety of reasons:

- The FLOT must remain behind the FSCL

at all times (excluding inserted forces operations). Thus, the FSCL is placed sufficiently distant from the FLOT to accommodate the most optimistic projection of friendly forward movement until the FSCL is again adjusted (normally every twelve hours).

- The administrative process of locating the FSCL, coordinating the position with adjacent commanders and with the appropriate tactical air commander, and disseminating the map trace takes time. This time, and any FLOT movement associated with it, must be allowed for in FSCL placement.
- Standard procedure requires that there be no movement of the FSCL back toward the FLOT in selecting "well-defined terrain features."
- Finally, because we recognize that a mistake can result in friendly casualties, each step in determining final placement of the FSCL includes a margin for error which takes account of, among other factors, friendly unit location uncertainty.

Thus, we almost never see FSCL placement inside twenty-five kilometers from the FLOT. Thirty to forty kilometers seems to be the U.S. norm, and the distance can be even greater under certain battlefield conditions.

Accordingly, we cannot expect the FSCL to constitute a reasonable boundary line between close air support and air interdiction. As a consequence, were we to insist on not doing air interdiction inside the FSCL, it would be possible to construct a doctrinal "no-mission zone." In the area between about five kilometers from the FLOT out to the FSCL, we would not do close air support, because targets are not in "close proximity" to friendly forces, and we would not do AI, because the targets are inside the FSCL. There is "no mission" that applies in the zone where attacks must be coordinated but need not be integrated.

FSCL and the Target Array

A major disadvantage of the FSCL as a battlefield control measure is that it bears no direct relationship to the density or distribution of enemy targets. It was never meant to, being primarily a safety measure, but one could argue that the shortcoming was less important in previous times because the target array was rather different. Formerly, we thought of ground forces as being concentrated more narrowly at the front, with only a relatively small reserve held out of the fight. Away from the point of contact, there was a rapid diminution in targets that could have a near-term impact on the battle.

Our present view is of a battlefield of great depth, featuring the arrangement of enemy forces in a succession of echelons. For example, the standard depiction of Soviet-style echelonment shows the first-echelon division in the area from zero to thirty kilometers from the FLOT. (See Figure 1.) This places it inside the nominal FSCL. The first-echelon division includes two sets of targets: (1) first-echelon regiments, in the zone from zero to fifteen kilometers, deployed for combat, and either in contact or "close proximity." Obviously, this is the CAS target set; and (2) second-echelon regiments, in the zone from fifteen to thirty kilometers, in tactical march column, moving to contact, but not yet in "close proximity" as usually defined. This is the leading edge of a series of formations we lump together under the heading "second echelon," the elements of which extend rearward to considerable depth. We are likely to see at least the second-echelon regiments of the lead division inside the FSCL. Fire support coordination line placement beyond thirty kilometers (which we can expect) would also incorporate some elements of the second-echelon division.

Clearly, we must attack the second-echelon target set. We could even argue that, in some respects, it is an easier target than enemy forces in contact. Second-echelon vehicles will likely be lined up on roads instead of dispersed, under cover, mixed in with our own, etc., and at least some organic air defenses will be buttoned up for travel. It is of special importance that we attack second-echelon targets inside the FSCL,

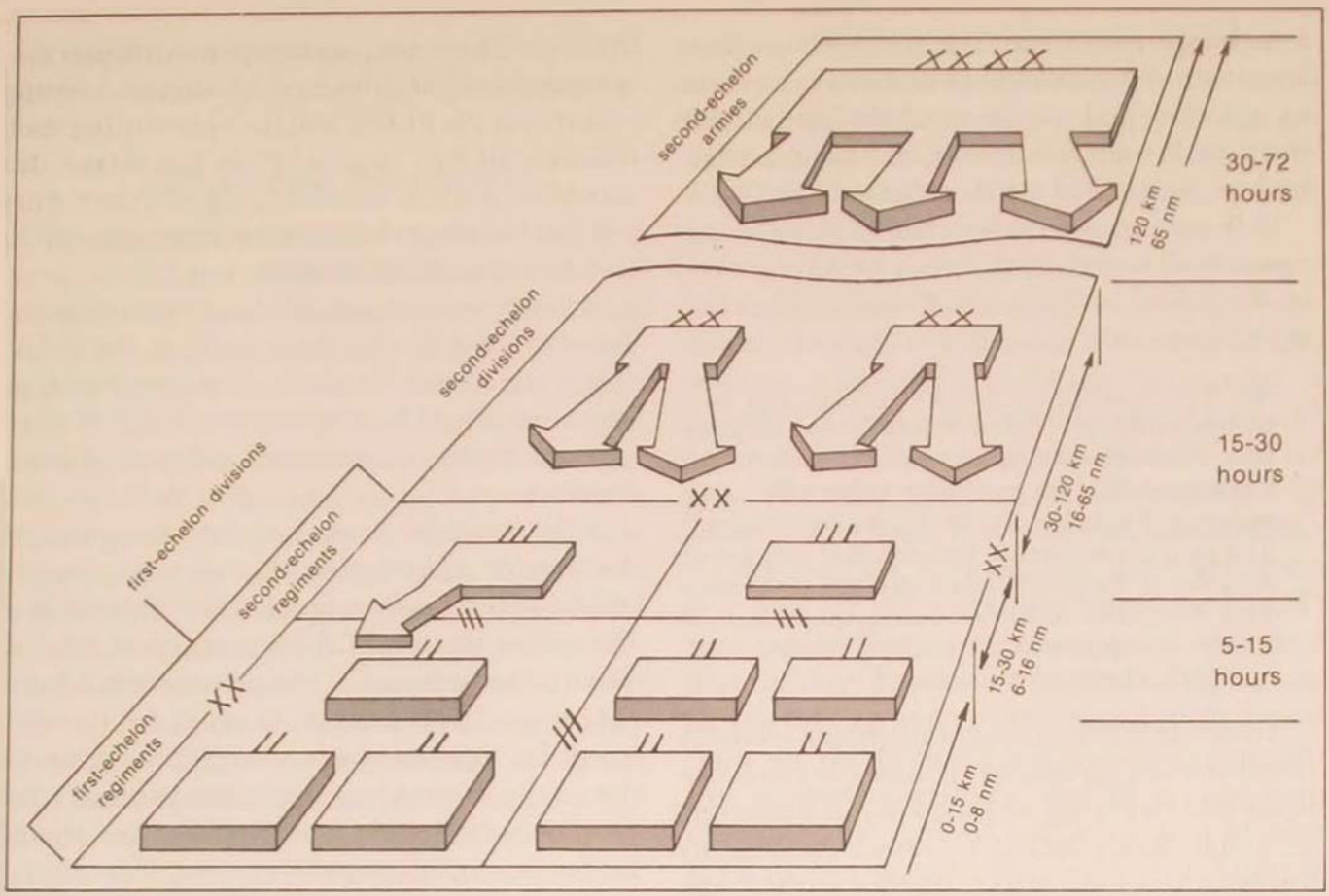


Figure 1. The Second-Echelon Threat

since these targets constitute a more-or-less immediate problem for the ground commander. However, second-echelon elements found inside the FSCL do not fit in the CAS mission category. In fact, they occupy the hypothetical "no-mission zone" described earlier.

How Interdiction Has Changed

Just as the tactic of echelonment has changed our view of enemy force deployment on the battlefield, so too has there been an evolution in thinking about the interdiction mission. Conceptually, interdiction has always been a mix of attack on enemy forces and attack on transportation infrastructure supporting movement of these forces. But up to the mid-'70s, the main emphasis was on "isolating" the battlefield, reducing the flow of men and materials by attacking the line of communications (LOC) infrastructure. The point was often made that, by contrast with CAS, where effects are immediate, there is a time lag associated with interdiction effects. A good example of this view appears in the March 1973 version of Army Field Manual 100-26, *The Air-Ground Operations System:*

> The effect of an air interdiction campaign seldom is immediately apparent. A coordinated and sustained effort based on sound intelligence and an analysis of the enemy logistic system is required to achieve results.

Naturally, we continue to think of interdiction as involving attacks on LOC infrastructure, but there has been a gradual shift in emphasis, with much more attention now given to

attacking enemy main force units as they move to contact. This changing emphasis can be seen in our doctrinal treatment of the interdiction mission. We are now giving much more attention to "battlefield air interdiction" (BAI).

Our concept of BAI—what it is, how it is controlled, etc.—is still evolving.[9] As of the end of 1984, TAC and TRADOC had defined BAI as follows:

> Air interdiction (AI) attacks against land force targets which have a near-term effect on the operations or scheme of maneuver of friendly forces, but are not in close proximity to friendly forces, are referred to as battlefield air interdiction (BAI). The primary difference between BAI and the remainder of the air interdiction effort is the near-term effect and influence produced against the enemy in support of the land component commander's scheme of maneuver.[10]

To recapitulate, the second echelon—enemy *forces* stacked up behind elements in contact—is the BAI target set. At least some of this target set will be inside the FSCL.[11] Since these enemy forces can already affect friendly ground maneuver, it is not enough to delay or degrade them using the time-honored method of attacking LOC infrastructure. Immediate effects are required. We must attack BAI targets directly, with the purpose of destroying them.[12]

BAI versus CAS

How are we to attack the BAI target set? What control measures apply? One answer would be to consider BAI targeting a part of the CAS problem. Targets, munitions selection, and attack timing would be the responsibility of the ground commander. Detailed planning and execution control would be done by tactical air control parties (TACPs).

There are a number of good reasons—which can be dealt with here only in outline—why we should not attack the BAI target set within the framework of the CAS system:

- Combat featuring echeloned enemy forces is likely to be characterized by high-threat conditions. These circumstances may restrict employment of our primary CAS aircraft, keeping them near the FLOT and thus preventing their use against BAI targets. While important, this problem is not of overriding significance, since we have high-performance aircraft that can be tasked for the CAS mission.
- It may not be possible to provide terminal control for CAS missions back to the FSCL. This, too, is not an insurmountable problem, since we might be able to use "Fast FACs" or operate under "procedural" rather than direct control.
- Some in the Army may feel shortchanged because of a perception that we are spreading CAS over too large a target base. According to this view, the total CAS apportionment is for use in the narrower, "close proximity" band. Many would hold that CAS assets are not sufficient for this purpose and the resource would be fatally diluted by assignment to targets that ought to be attacked by aircraft from the AI apportionment category.
- A more serious problem is that we may be required to "package" CAS. There is no near-term prospect that TACPs serving with Army maneuver units, including the corps ASOC, will have the capability to put together "packages" with all the various kinds of support required—fighter cap, Wild Weasels, EF-111s, Compass Call, tankers, etc. Accordingly, if we insist that the BAI target set be attacked as if it were a CAS problem, then many of the planning responsibilities for CAS would have to migrate from the ASOC to the air commander's tactical air control center (TACC), the only place where such "packaging" can be done. This move would be a particularly unfortunate reversal of our conviction about decentralizing planning and execution of CAS.[13]
- Finally, there is no doubt that the requirement for "detailed integration" reduces our flexibility in the application of TACAIR. The CAS system has stood the test of time, it works well, and it is worthwhile to trade off flexibility when safety of friendly troops is at stake. But

we ought not to pay this price to go after BAI targets, which are not in "close proximity."

Coordinating Interdiction

It seems clear, on balance, that attacking BAI targets is a kind of interdiction, not a kind of close air support. Moreover, as we have seen, there is no reason not to fly properly coordinated interdiction missions inside the FSCL. But TAC and TRADOC have now moved beyond "coordination" to a concept and procedures that give the ground commander a leading role in selecting and prioritizing BAI targets on both sides of the FSCL. It has been agreed that the senior ground commander will establish a liaison team, the battlefield coordination element (BCE), that will operate inside the tactical air control center. As envisioned by TAC and TRADOC, the battlefield coordination element will comprise approximately thirty Army officers and NCOs organized for two shifts, with duty positions in all main divisions of the TACC. All BAI attacks, on either side of the FSCL, will be "coordinated," in the sense that the ground commander nominates and prioritizes BAI targets and attack timing. The BCE is the agent of the ground commander, the mechanism through which BAI targets are nominated and "coordinated."

However, the impact and influence of the BCE are bound to extend beyond the core function of ensuring that BAI attacks support the ground commander's scheme of maneuver. The BCE increases the prospect that air and ground commanders will share congruent views of the battlefield situation. It ensures that each commander understands the other's near-, mid-, and long-term military objectives, so that, for instance, they can continue to act in harmony even if there is a temporary break in communications. The BCE observes planning and execution for all air activities, including AI to the full depth of theater operations, and will understand (and be able to explain to the commanders of various Army formations) the rationale for the air commander's decisions.

In addition to serving the ground commander's needs inside the tactical air control center, the battlefield coordination element provides important assistance to the air commander. It is the BCE that will "coordinate" AI attacks inside the FSCL that are initiatives of the air side. The BCE will find an important role in coordinating Army fires used to suppress enemy air defenses, as, for example, when we create corridors for air operations across the FLOT. And the BCE will coordinate employment of organic Army assets used in interdiction, ensuring that air and ground interdiction operations are deconflicted and mutually supporting. It seems inevitable, and in my opinion, desirable, that the BCE will eventually involve itself in the planning for virtually all kinds of air activity.[14]

TODAY, our basic concept features an airland battlefield of considerable depth, where operational success is achieved by employing well-coordinated ground and air forces. The BCE plays a key role in ensuring that we attack the target set jointly, with jointly agreed objectives and timing. Air Force missions and associated control measures, including the FSCL, need not change. They are flexible enough to accommodate the new approach. But with the introduction of coordinated BAI, we have every reason to expect that our chances of achieving good results in joint operations will be considerably brighter.

Hq USAF

Notes

1. Air Force's Tactical Air Command (TAC) and the Army's Training and Doctrine Command (TRADOC) have produced joint concepts, doctrine, and procedures since 1975 under the auspices of AirLand Forces Application (ALFA) Agency. ALFA is located at Langley AFB, Virginia. It is manned jointly, with the director

position rotating between the services. Among ALFA's more important publications are *Joint Air Attack Team Operations (JAAT)*, *Joint Suppression of Enemy Air Defense (J-SEAD)*, and *Joint Attack of the Second Echelon (J-SAK)*.

2. "CSA CSAF Initiatives for Action," Attachment to General Charles A. Gabriel, USAF, and General John A. Wickam, Jr., USA, *Memorandum of Agreement on U.S. Army-U.S. Air Force Joint Force Development Process*, 22 May 1984.

3. Colonel Robert D. Rasmussen, "The Central Europe Battlefield: Doctrinal Implications for Counterair Interdicton," *Air University Review*, July-August 1978, pp. 11, 13.

4. Brigadier General Donald R. Morrelli, USA, "FLOT FEBA Background Information," *Memorandum for General Otis*, 10 August 1981, on file at Hq TAC XPJD.

5. Note that, if we credit the definitions, we ought to be able to attack any target between the FLOT and the FSCL without hitting friendly troops.

6. Captain Peter M. Ossorio, USA, "Beyond the No Bomb Line—Fire Support Coordination, 1980's," *Military Review*, October 1978. The FSCL continues to have some of the character of a bomb line. For instance, the Army's current version of Field Manual 6-20, *Fire Support in Combined Arms Operations*, puts the FSCL in the category of a "permissive action line," a principal purpose of which is "to expedite the attack of targets beyond" the line, because the requirement to coordinate does not apply.

7. In NATO, this notion is stated concisely in STANAG 2099, *Fire Coordination in Support of Land Forces:* "A request by a unit" for air support or additional artillery naval gunfire on a target short of the FSCL but which has been coordinated with and passed on by the land force command concerned obviates the necessity for further check by the delivery unit.

8. This statement also holds for support of friendly ground forces employed for raids or other deep-maneuver actions *beyond* the FSCL. Close air support, with all the detailed integration that term implies, will be provided for air attack missions in close proximity of such forces.

9. According to a distinguished former TRADOC commander, the Air Force is "agonizing over this problem." See General William E. DePuy, "Toward a Balanced Doctrine," *Army*, November 1984.

10. USREDCOM Pamphlet 525-8, TRADOC Pamphlet 525-45, TAC Pamphlet 50-29, *General Operating Procedures for Joint Attack of the Second Echelon (J-SAK)*, 31 December 1984, p. 2-7.

11. The depth of the BAI target set is hard to pin down. It seems to me that it rests with the ground commander to determine how far back enemy force elements can be located and still exert a "near-term effect" on friendly operations. A lot of battlefield variables—weather, terrain, enemy force mobility, etc.—will influence this judgment.

12. Our technical capability to interdict LOC infrastructure is fairly good, even at night or in bad weather. Because BAI targets move, and move around-the-clock, we need systems like LANTIRN and IIR Maverick. As we field improved battlefield sensor systems capable of tracking BAI targets in near real time, like J-STARS, we will need to decentralize attack execution; hence, the requirement for a ground attack control center (GACC).

13. An alternative would be to beef up air support operations center capabilities; assign electronic warfare, air-to-air, and other needed expertise; and create a mini-TACC that would have at least some of the technical capabilities required to put together CAS "packages." However, in my judgment, we do not have the resources available to make such a concept workable, even if it is a good idea. It is difficult to imagine such an arrangement working well in, for instance, the Central Region of Europe, where eight allied corps are on line in peacetime.

14. One of the chiefs' thirty-one initiatives—initiative 21—tasks TAC and TRADOC to test the battlefield coordination element concept in order to leave no doubt about our ability to "synchronize" joint action against the BAI target set. As this is written, planning for the appropriate command post exercises and field tests is under way.

In everything, and especially in warfare, great is the power of fortune.

Julius Caesar, *The Gallic Wars*
Loeb Classic Library Edition, p. 357

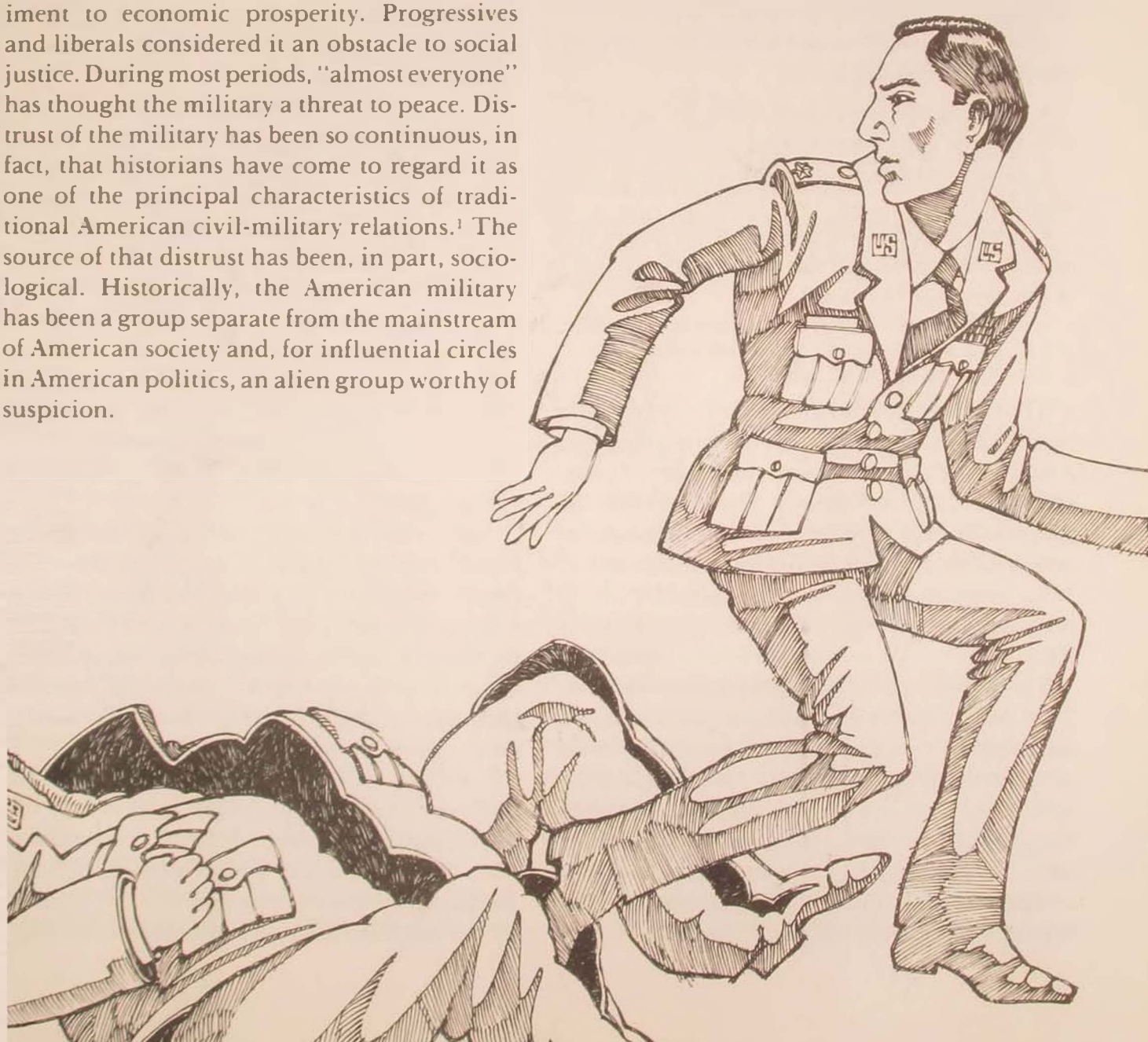
ARE OFFICERS INCOMPETENT?

military reform's case against the officer corps

MAJOR FORREST E. WALLER, JR.

NEARLY every prominent political group in America has found cause to distrust the military. Whigs and Jeffersonians believed the military a threat to liberty. Jacksonians believed the military an opponent of democracy. Nineteenth-century industrialists considered the military an impediment to economic prosperity. Progressives and liberals considered it an obstacle to social justice. During most periods, "almost everyone" has thought the military a threat to peace. Distrust of the military has been so continuous, in fact, that historians have come to regard it as one of the principal characteristics of traditional American civil-military relations.[1] The source of that distrust has been, in part, sociological. Historically, the American military has been a group separate from the mainstream of American society and, for influential circles in American politics, an alien group worthy of suspicion.

In contemporary America, however, an evolution in that traditional attitude seems to be occurring with the appearance in American politics of a movement dedicated to military reform. Composed of prominent members of the Congress, media, and national security



community, the military reform movement has criticized American national defense in general and the U.S. Armed Forces in particular. Among the movement's chief concerns about the armed forces is the professionalism of the officer corps. Military reformers believe that the officer corps, far from being a separate group alien to the American mainstream, has plunged into its center by adopting the dominant occupational model in civilian society. In the view of military reformers, that civilian emphasis in the officer corps poses a different sort of danger to society, military incompetence. Stated boldly, military reformers believe that the American officer corps has too many civilianized military managers and too few authentic soldiers.

This unconventional view of the military raises a series of questions.

- What is the military reform movement's case against the officer corps?
- What evidence supports this case, and how sound is it?
- What conclusions can one draw about the reform movement and the officer corps in light of the case and evidence?

The Case

The military reform movement constructs its case against the officer corps by reasoning from two firm convictions about the nature of competent military institutions. The first is that the purpose of military institutions is fundamentally unlike anything found in civilian society. What civilian society at large tolerates or expects from its military institutions, it does not condone or promote in other institutions.[2]

The second conviction derives from the first. A military institution's unique purpose as an organization for violence demands a unique set of values among military officers, which civilian habits of mind and professional perspectives can adulterate. Thus, one of the officer corps' first obligations is to understand the unique role that military institutions play and to adopt a single-minded professional perspective congruent with that role.[3]

Military reformers adhere to the "institutional" view of military service and the "traditional" definition of military professionalism. They are related notions. The institutional view maintains the following: (a) military service is a "calling," characterized by norms and values subordinating individual, personal interest to a "presumed higher good"; (b) military personnel make up a social group distinct from society at large and earn admiration insofar as they observe norms demanding sacrifice and dedication (that is, insofar as they observe norms deemed loftier than those allegedly found in most of society); and (c) military service takes place within a paternalistic setting that inspires trust and a sense of community among military personnel.[4]

Similarly, the traditional definition of military professionalism holds that the corps of officers responsible for conducting organized violence in society's behalf is a true professional body having a unique expertise, responsibility, and sense of identity. Further, military institutions perform a "higher service" for society than most other institutions; hence, military service is a calling, not just another job. In order to maintain the professional standing of the group, officers must concentrate on the business of officership—warfare—and resist the temptation to adopt other professional perspectives.[5]

In the view of military reformers, the institutional view of military service and the traditional definition of professionalism create a system of values and commitments conducive to skill in military operations. Military reformers imply that those values and commitments are the basis of competency in an officer corps. They are not alone in that belief.

Many senior American military officers (and, of course, military traditionalists) accept the traditional definition of military professionalism. However, many junior officers do not. Junior officers are more prone to view military service as an occupation rather than a calling.[6]

Thus, they tend to have perspectives and habits of mind inconsistent with traditional views of military professionalism. Sometimes the inconsistencies are disturbing.[7] Military traditionalists accuse the armed services themselves of having created and perpetuated occupational attitudes by encouraging officers to flirt with irrelevant professional perspectives from civilian society.[8]

Members of the military reform movement are more specific. The services, they allege, have diluted the professional qualifications of the American officer corps by making skill in management the preeminent quality of good officership. By exaggerating the importance of expertise in management, the reformers suggest, the services have tempted the officer corps to provide services that society does not need (or can find elsewhere more cheaply), to delude themselves about the nature of war and the characteristics of military leadership, and to confuse or discard essential military skills and habits of mind for irrelevant ones from civilian society. In brief, reformers say, the officer corps has become incompetent as its members have become civilianized.[9]

According to military reformers, the exaggerated emphasis on management skill in the American officer corps leads to other unhealthy consequences in addition to incompetence. One key effect is to undermine the quality of combat units. Allegedly, people are no longer led in the military. They are "managed." When people are treated as "resources" and billet cyphers, military service becomes dehumanized (i.e., it loses the paternalistic quality characteristic of an institution), and military institutions lose their attributes of trust and social community. In addition, exaggerated emphasis on skill in management allegedly leads to demoralizing personnel turbulence and turnover. It diverts resources from training for war to administration, procurement, and other support services. The Congressional Military Reform Caucus believes that the overall effect of those influences is clear: "We now have less unit cohesion, less quality in our combat units, and less ability to attract and retain qualified people than ever before."[10]

Military reformers assert that the services' exaggerated emphasis on expertise in management leads to an ethic for military service that is incompatible with the military's institutional norms. The managerial mind-set is said to promote recruitment policies that encourage fee-for-service voluntarism. The primary principle of such voluntarism is personal interest, not personal sacrifice. Recruits animated by such interest are difficult, if not impossible, to mold into truly coherent military units capable of accepting sacrifices of combat. Military reformers believe that units composed of such personnel will disintegrate under the strain of battle. Ultimately, military reformers question whether those soldiers will fight.[11]

Furthermore, reform advocates believe, the excessive emphasis on management skill in the military has so colored the officer corps' vision of its work that officers consider a successful career to be little more than the outcome of good management.

> The crucial word for this phenomenon is "careerism," which means, in essence, the desire to *be* rather than to *do*. It is the desire to have rank, rather than to use it; the pursuit of promotion without a clear sense of what to do with a higher rank once one has attained it.[12]

Like the incentives offered to attract military recruits, careerism allegedly feeds on self-interest, not on self-subordination to an institutional norm.

The operative principle of careerism is "ticket punching." Ticket punching entails securing credentials for advancement as rapidly as possible while avoiding mistakes and risks that could blemish those credentials. This principle emphasizes short-term high performance, then pursuit of the next credential needed for promotion, promotion itself, and then a new cycle of credential-seeking for the next rank. This career profile often is associated with aggressive young executives in the business commun-

ity and is increasingly criticized for its harmful consequences in industry. Not surprisingly, military reformers detect in it harmful consequences for the military, too.

Careerism is said to destroy the officer evaluation system for promotion and to trivialize the legitimate functions of officership. Most important, careerism destroys the bond of trust between officers and enlisted persons inasmuch as officers searching for attractive credentials use their subordinates rather than lead them.[13] As more and more officers with the careerist attitude and the managerial ethic succeed, reformers say, the more room there is at the top for like-minded officers.[14] Consequently, careerism is said to be contagious and self-perpetuating.

Finally, reformers indicate, the heavy emphasis on expertise in management in the officer corps moves officers toward a rationale or logic hostile to effective weapon development.

> A manager's logical analysis arises from the world of economic competition, not physical combat. When a businessman's methods are applied to planes, tanks, and guns, they can lead to fatal mistakes.[15]

Managerial logic judges weaponry by "economic" criteria: cost per ton-mile, bomb load per air-mile, cost exchange ratios between weapons and their targets, and other indices of efficiency. Managerial logic supposedly confuses efficiency in the laboratory with effectiveness on the battlefield. Weapon developments guided by managerial logic frequently increase the vulnerability of American forces; they are often inconsistent with important human factors in combat; or they are too difficult to maintain, too expensive to operate, or too fragile to use regularly at maximum performance.[16] In the opinion of military reformers, those problems increase the hazard of combat to American forces, reduce the effectiveness of individual combatants, and jeopardize military readiness.

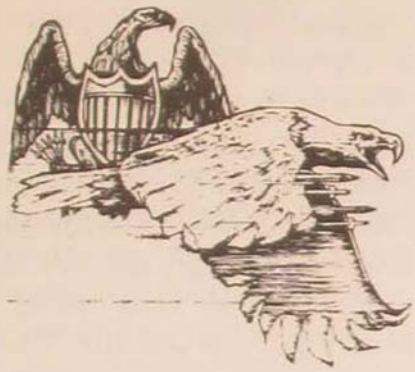
The military reform movement's case against the officer corps makes American officers and their professionalism appear minatory, not because the officer corps is hostile to American values but because it is incompetent, self-serving, and unprepared for war. According to military reformers, the record of the American military since the Inchon landing is the most impressive proof of the harm that modern officership has caused. The performance of U.S. forces in Vietnam, Koh Tang Island, Desert One, and Lebanon are evidence of incompetence that reformers attribute directly to the officer corps.[17] What military reformers recommend is a restoration of balance among the abilities needed in the military (i.e., an end to the exaggerated emphasis on management skills and values among officers in favor of more traditional ones).[18] In short, military reformers want an officer corps with fewer managers and more real soldiers.

The Evidence

Frequently, military reformers cite no evidence as they state their case against the officer corps. When they do, reformers tend to cite evidence of a particular kind, expert testimony. If the military reform movement's case were exclusively a philosophical one describing a particular view of ideal officership, then the evidence that military reformers provide would justify no complaint. Military reform's case, however, is more than an argument for an ideal. Military reform's case purports to describe what officers do, what officers' qualifications are, how officers view their work, and how successful officers are in the performance of their duties. Military reform's case against the officer corps is largely sociological, and the movement's evidence is primarily a compilation of anecdotes.

Military reformers may be prisoners of the medium in which they present their case, the popular press. Journalism relies heavily on interview and expert testimony. Reformers who are journalists maintain, believably, that journalism is "a way to learn" about the sociology

of the officer corps for people who are not social scientists. The weakness of journalism as a methodology is that it is arbitrary. Many journalists acknowledge that subjectivism is a characteristic of their craft. For reformer-journalists who are also members of a political movement, subjectivism appears to be an insurmountable obstacle. The evidence of reformers' confinement is the list of experts whom military reformers cite. Most of the experts are other military reformers.



It would be a mistake, however, to conclude that the military reform movement is ignorant of scientific military sociology. Indeed, the movement is so beholden to a particular sociological work that it is difficult to explain why military reformers fail to cite it as the inspiration of their movement. That work is *Crisis in Command* by Richard A. Gabriel and Paul L. Savage. In the mid-1970s, Gabriel and Savage criticized officers in the U.S. Army because of the Army's performance in Vietnam. According to the authors, aggressive careerism in the Army's officer corps led to the disintegration of primary group social bonds in combat units. As a result of that disintegration, the authors said, American forces collapsed under the strain of combat. Gabriel and Savage prescribed an antidote for the problem: a heavy dose of military reform to restore institutional-traditional values in the officer corps.

Crisis in Command is a famous study and a controversial one. In 1977, about the same year military reformers began to construct the foundation of their movement, the Inter-University Seminar on Armed Forces and Society examined Gabriel and Savage's study and published its findings. The examiners rejected Gabriel and Savage's evidence and their explanation of disintegration in American combat units.[19] Paradoxically, military reformers appear to have embraced the outlook and recommendations in *Crisis in Command* just as social scientists discredited its evidence and conclusions.

Military reformers are also aware of the work that social scientists have done in comparing military and civilian institutions, although they seldom cite it. Military reformers have borrowed the idea of "civilianization" from military sociology. Civilianization in the military is manifest in several ways: the changing qualifications of officers and officer occupational distributions that promote support services rather than operations;[20] the similarity of attitudes on domestic and foreign political questions among military elites (senior officers) and business elites (managers);[21] and, most important, the similarity between military and civilian occupational structure and organizational forms.[22] Unlike military reformers, however, the sociologists who document those manifestations are careful to tell the reader that they are partial in scope and varied in degree.

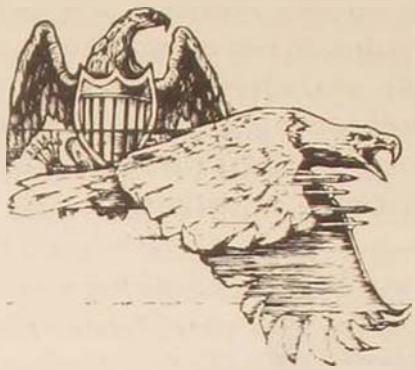
For example, studies documenting the migration of officers out of operations show that the occupational concentrations of officers in operations vary dramatically among the services and over time. In 1973, the percentage of officers working in operations was 70 percent in the Marine Corps, 57 percent in the Army, 45 percent in the Air Force, and 30 percent in the Navy. By 1982, the occupational concentrations of officers in operations had changed significantly. The Marine Corps still had the highest concentration of officers in operations (53 percent), and the Navy still had the lowest (21 percent). The Air Force and Army had exchanged places (42 percent and 30 percent, respectively).[23] The striking change in the ground services may have been due, in part, to the

extensive technological modernization that the Army and Marine Corps underwent in the 1970s and the resultant demand that modernization created for technical specialists.

Of equal interest is the relative stability of occupational concentrations in the Air Force. In some circles, the Air Force is regarded as the most technologically advanced of the services and the sociological pacesetter for the armed forces. The occupational stability in the Air Force implies that military forces experience a slower rate of sociological change as they mature technologically. On balance, the data also suggest that the circumstances of the officer corps' occupational concentrations are different enough among the services and over time to warrant distinctions and qualifications which the case against the officer corps does not make.

The study of elite attitudes has demonstrated strong similarity between senior military officers and civilian managers. However, it also has revealed important differences. The attitudes of military and civilian elites are most dissimilar on matters pertaining to national security and defense. The difference is great enough for observers to warn of the potential for grave disagreement over national security issues between elite groups.[24] Military and civilian elites may be much alike, but their differences ought to leaven, as they presently do not, the reformers' notion of civilianization.

The most important evidence of civilianization in the military is the "convergence" of military and civilian occupational forms and organizational structures. To the degree that military personnel work like civilians work or work in organizations resembling civilian organizations, one can say "civilianization" has occurred. Numerous studies have addressed the convergence phenomenon, and scholars disagree about nearly every aspect of it. They disagree about the implications of convergence, the manner in which it is occurring, even about whether an aggregate convergence phenomenon exists. As one researcher has written, "The convergence phenomenon today has the status of an interesting hypothesis in military sociology."[25] The military reform movement has assumed that convergence is a fact and, thus, has exaggerated the strength of its case.



A few military reformers assert that the real proof of incompetence in the American officer corps is to be found in American military history. They cite American military failures since the Inchon landing as proof. That "proof" is inherently biased. First, it is selective. Reformers imply inaccurately that American military history since Inchon is one of unrelieved operational failure. They never attempt to establish a balance between success and failure. Second, they arbitrarily set the historical boundary at Inchon perhaps because it is too difficult to explain how American military operations in World War II could have had so many examples of failure and still yielded such a resounding success. Moreover, the central assumption of the reformers' proof is that military officers are ultimately responsible for that which occurs on the battlefield. In reality, authority and responsibility are far more diffused than reformers seem to understand. In the American military system today, civilian political authority decides questions of force structure, force employment, equipment selection, and even tactical objectives. An informed investigation of responsibility for failure in American military operations since Inchon would doubtless come to a more evenhanded distribution of blame than the one military reformers have published.[26]

Finally, the reformers' historical interpreta-

tion of military competence has patent conceptual flaws. Military reformers have yet to define military competence. They have merely identified examples of what they consider incompetence. Military activity is a complex and heterogeneous enterprise. It occurs in two dimensions: a vertical dimension, in which hierarchical actions take place to prepare for and conduct warfare; and a horizontal dimension, in which simultaneous, interdependent tasks occur at each level of the hierarchy. It is possible to judge military effectiveness on the basis of performance in the vertical dimension by evaluating the political, strategic, operational, and tactical proficiency of organizations and groups. It is possible to judge effectiveness in the horizontal dimension by evaluating training, logistics, intelligence, industrial production, and combat. Obviously, evaluations along those dimensions will be complex and will detect friction and competition between the various factors.[27] Events that the reformers have tagged as "incompetence" could easily have explanations having nothing to do with ability of field officers. The emphasis of the reform historians on an undefined operational ideal does not advance our understanding of military effectiveness or provide us a useful conceptual framework with which to judge it.

In the final analysis, the military reform movement's school of military history shares the same disabilities as all monocausal interpretations of history. It is simplistic and unsupportable. In the mid-1970s, many reputable American and European historians rejected monocausal schools of history as bad scholarship. Paradoxically, military reform historians chose that same period to invent a new one.

A case against the managerial emphasis in the officer corps, whatever its degree, could be made if one demonstrated clearly that it led to unacceptable consequences in the armed services. The military reform movement asserts that the managerial emphasis impedes the social integration of recruits, encourages careerism, and produces ineffective weaponry.

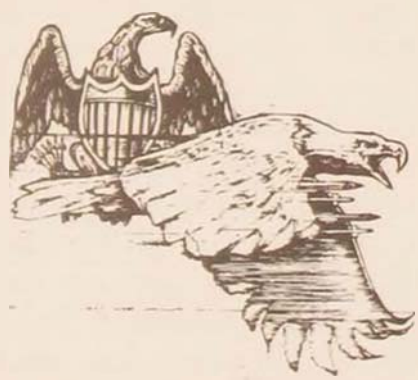
It is a matter of conjecture that the material incentives offered recruits under a system of voluntary service inhibit the formation of social bonds among combatants. There is no reason to believe that material benefits hinder integration any more than the alternatives to voluntary service do. What military reformers fail to understand is that all inducements to military service appeal to self-interest. Whether it is compulsory service with the threat of imprisonment or selective service with the prospect of personal reward, both appeal to selfish concerns. Inasmuch as that is the case, the only legitimate complaints about recruitment incentives pertain to the size, quality, representation, and cost of the recruited force. Hypothetically at least, a system of voluntary service helps social integration by reducing the rate of turnover among first-term enlistees and by making it easier to get rid of recruits who prove unsatisfactory.[28]

While it is conjecture that current recruitment incentives impede social cohesion in military units, there is no doubt that careerism exists in the officer corps. Senior officers have expressed their concern about careerism.[29] Military reformers document the concern of more junior officers. Military reform's explanation of careerism, however, is unsatisfactory. Reformers, again, are content to assert but not to prove their assertions factual. They do not show causal links between careerism and the degree of management emphasis in the officer corps, and they do not prove that careerism creates any harmful consequences. Sociological studies of officer qualifications and career patterns suggest, in fact, that management skills are not decisive factors in the selection and promotion of flag rank officers.[30] Those studies bring into question nearly everything reformers have written about careerism.

Although reformers have suggested that the emphasis on management in the American military, whatever its degree, leads to ineffective weaponry, the basis of their argument on this point is unclear:

> The failing of managerial defense is usually described as its inability to distinguish between efficiency, in the economic or technological sense, and effectiveness on the battlefield. That covers the point, but too crudely. The real problem is the use of an oversimplified, one-dimensional form of analysis, often based on simulations and hypotheses, in place of more complicated judgments, based on data from combat or realistic tests that take into account the eight or ten qualities that must be combined to make a weapon effective.[31]

This is essentially a criticism of systems analysis. What is unclear is the manner in which ineffectiveness derives from systems analysis. Military reform's view may be that the methodology of systems analysis leads to ineffective weapons or that military systems analysts are incompetent. The first view is inconsistent with the best work that military reformers have done, which uses classic systems analysis techniques and shows intense interest in economic and technological efficiency.[32] The second view is inconsistent with information that reformers themselves provide.[33]



In reality, the differences between military reformers and military analysts probably has less to do with particular tools or competence than with their opinions regarding the best manner in which to wage war and the proper apportionment of resources to prepare for war. There is evidence to support that interpretation of their differences. Military reformers are virtually unanimous about the need of the U.S. Armed Forces to adopt a tactical doctrine based on maneuver warfare, and they eagerly anticipate the resources that this doctrine will release to other categories of expenditure.[34] The military reform movement is, after all, a political movement. Clearly, politics will be prominent among the movement's motives. If those observations are valid, then the source of difference between military reformers and military analysts will be found in doctrinal and political preferences, not in the degree of management emphasis in the armed forces or the collective competence of officers.

MILITARY reform's case against the officer corps does not resonate with strength, but neither is it clearly wrong. That judgment is based largely, but not exclusively, on military reform's evidence. A strong case would have a clear and useful framework from which to proceed, would exhaust available evidence, and would select a rigorous standard of proof for that evidence. An incorrect case would be trivial on its merits or demonstrably false. None of those characterizations apply to military reform's case against the officer corps. The sociological evidence (military reform's case is clearly sociological) supports both an interesting hypothesis about civilianization and concern (but not alarm) about the structure and dynamics of sociological change in the officer corps. The sociological and historical evidence does not support a general judgment of incompetence in the officer corps, nor does it support the charge that the armed services place too much emphasis on management skills and values. In these areas, military reformers are guilty of judging the officer corps by using unhelpful labels and ignoring military culture. To reformers, military management is *management*, a scientific methodology developed by civilians for civilian enterprise. In reality, military management is to *management* what military music is to *music*. The languages are similar, but the cultural objectives (and outcomes) are not.

That the case against the officer corps does

not resonate with strength does not mean that military reform's recommendation to create an officer corps with a different balance of skills is a bad one. It simply may mean that a workable, although imperfect, balance already exists. Military reform's appeal for more traditional values and attitudes among officers would be significantly stronger if reformers could show that those values contribute importantly to a competent officer corps. There is little reason to think that they do. Military reformers forget that the founders of American military professionalism, the officers whose views of officership became tradition, were the ones who preferred wars of attrition to wars of maneuver. Reformers forget that military traditionalists were the ones who recognized the contribution that high technology could make to armed might and who decided to make the United States armed services the most technologically advanced in the world. By those two standards of military reformism, traditional values and attitudes correlate with incompetence.

Modern officership, while not the cause for consternation that reformers say, is not necessarily a cause for celebration either. The work of modern officers seems to be increasingly rationalized in an inadvertent and, perhaps, unavoidable sociological process associated with technological modernization, doctrinal preferences for deterrence, and the necessity to advise civilian authority. For much of the officer corps, this rationalization process has stimulated new motives for service and new personal loyalties.[35] Those motives and loyalties make the traditional view of military professionalism and even the more modern view based on an unlimited liability clause increasingly irrelevant and unreal.[36] In short, a thoroughly contemporary view of military professionalism appears to be aborning in the modern Armed Forces of the United States. With it may come new ideas about the obligations of service, the obligations of institutions, and the anticipation of reward. Ultimately, military reform's case against the officer corps reminds us that the proper interest of military officers is officership and that officers do not define military professionalism by themselves. In that respect, military reform's case against the officer corps is helpful.

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Notes

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12. Fallows, *National Defense*, p. 114.

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25. Segal et al., p. 159.

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The more refined our historical understanding, the better prepared we are to recognize complexity, ambiguity, and uncertainty as intractable conditions of human society.

Integrity in the College Curriculum: A Report to the Academic Community, 1985

INTEGRITY: WHAT ARE THE DATA TELLING US?

MAJOR LEWIS H. GRAY, JR.

When responsible, dedicated people are joined together by lofty goals, they expect and demand integrity. Integrity is the fundamental premise of military service in a free society. Without integrity the moral pillars of our military strength—public trust and self-respect—are lost.

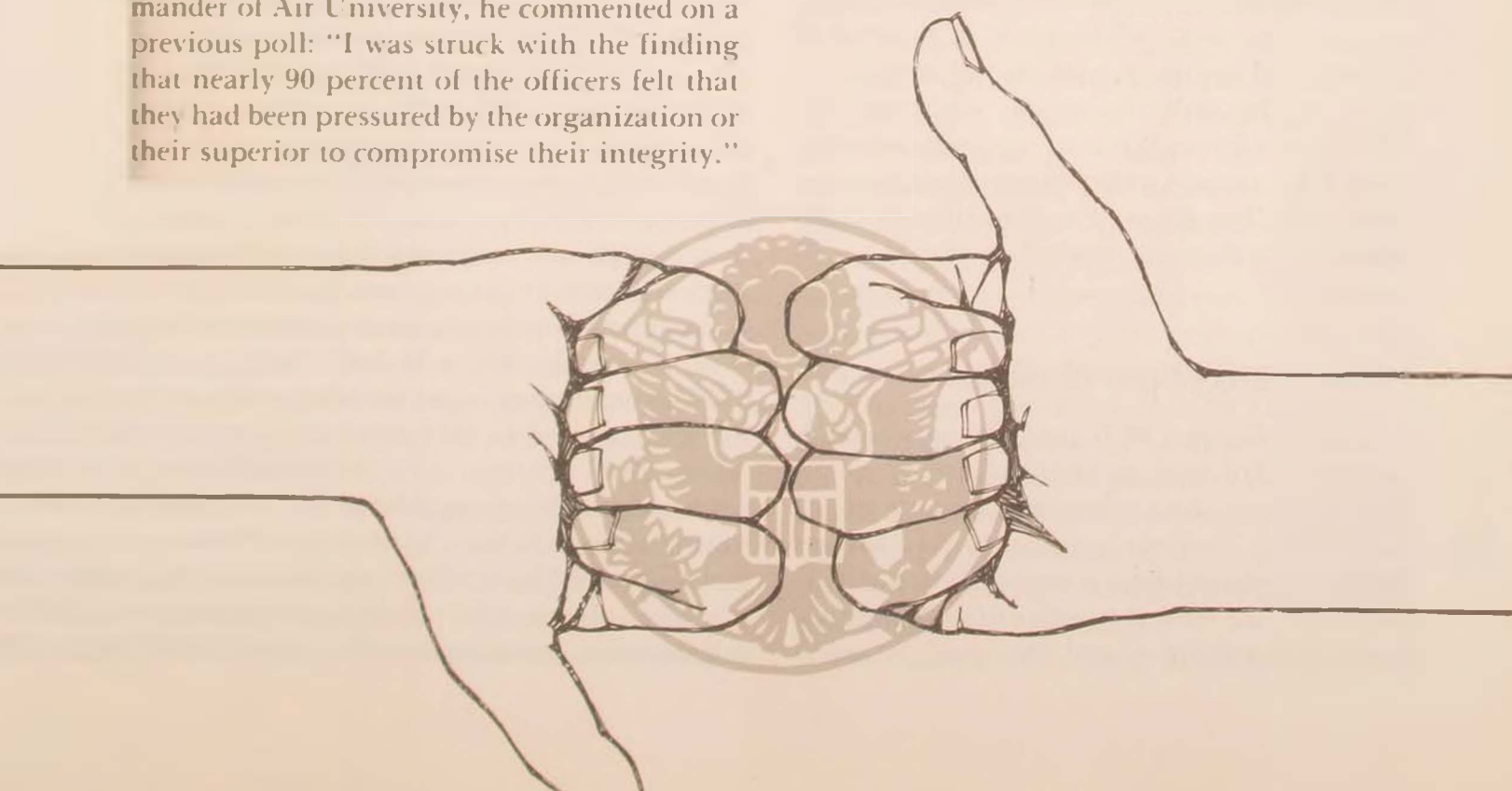
Integrity demands of each individual the highest standards of personal and professional honesty, and an unfaltering devotion to duty. It is rarely the easy way. Integrity is constantly assailed by self-seekers, appeasers, and shirkers. Resist them all. You, the Air Force, and the Country will be the better for your resistance.[1]

General Charles A. Gabriel
Chief of Staff

GENERAL Gabriel's remarks came in response to a survey of commissioned and noncommissioned officers attending professional military education courses at Maxwell Air Force Base, Alabama, in 1983. General Gabriel wanted to emphasize the key role of integrity in personal and professional activities. Additionally, in a letter to Lieutenant General Charles G. Cleveland, then Commander of Air University, he commented on a previous poll: "I was struck with the finding that nearly 90 percent of the officers felt that they had been pressured by the organization or their superior to compromise their integrity." He concluded this letter with a request for General Cleveland "to follow this up with the 82 83 classes, look into the whys and examples, and keep me in the loop as you go along."[2]

In response to General Gabriel's request, Majors Donald W. Hudson, Gerald E. Hull, and Robert L. Stevenson, officers attending Air Command and Staff College, conducted a research study titled "Integrity—The Pressures to Compromise." The three officers developed a survey to determine "the whys and examples" of breaches in integrity and distributed 1177 questionnaires to officers and senior noncommissioned officers enrolled in resident professional military education (PME) courses. Of that number, 781 or 64 percent of the questionnaires were returned.

Although the survey does not reflect the total Air Force population in terms of demographics, it serves as a "benchmark in understand-



ing why, to what extent, and in what circumstances officers and senior NCOs felt pressured to compromise their integrity."[3] The study was also unique in the sense that it considered actual examples of breaches in integrity instead of sampling attitudes about the subject. For example, Major Joseph R. Daskevich and Paul A. Nafziger had asked in their 1980 Air Command and Staff College survey on professionalism, "Were you ever pressured by the organization or senior officers to compromise your integrity?" Hudson, Hull, and Stevenson went several steps further and asked their survey participants to describe circumstances in which they felt pressured to compromise their integrity and, additionally, to list the primary motivations. The survey confirmed previous PME surveys: "77 percent responded they felt pressured during their Air Force career to compromise their integrity in a job-related situation." On a positive note, almost 90 percent of the participants felt that they were adequately equipped to deal with questions of integrity.[4]

These are the key points drawn from "Integrity—The Pressures to Compromise," but other important aspects of the report can best be examined in the context of previous research and the comments of important critics in various articles, speeches, and journals. A number of surveys and commentaries on the ethical climate of the military appeared during the 1970-83 time frame. While some common themes from these surveys and commentaries are supported by "Integrity—The Pressures to Compromise," others are refuted in the Maxwell study.

Perceptions of Integrity

In 1970, General William C. Westmoreland, Army Chief of Staff, tasked the Army War College to survey the professional climate in the U.S. Army. The resulting *Study on Military Professionalism* began a series of critical articles about the ethical health of the Army and, later, the Air Force as well. Designed "to assess the professional climate of the Army, . . . identify . . . problem areas, and . . . formulate corrective actions," the study portrayed the Army as "sufficiently out of step with . . . time-honored aspirations and traditional ethics of the professional soldier to warrant immediate attention at the highest levels."[5]

The study identified a serious gap between the ideal professional climate and the climate perceived by Army officers. The ideal included "individual integrity, mutual trust and confidence, unselfish motivation, technical competence, and unconstrained flow of information." But young committed captains were "frustrated by the pressures of the system, disheartened by seniors who sacrificed integrity on the altar of personal success, and impatient with what they perceived as preoccupation with insignificant statistics."[6] Not surprisingly, this report, written during the Vietnam era, reflected strong reactions to requirements for body counts after battlefield engagements. The respondents felt that they had compromised their integrity when they had had to fill specified quotas and then make recounts if the quotas fell short of the required number. In such instances, young officers perceived that the ethic of "duty, honor, country" had begun to slip away from the corps, as they had been required to demonstrate loyalty to their bosses rather than to the institution. Many young idealistic officers also slipped away and were "replaced by those who will tolerate if not condone ethical imperfection."[7]

Although one might speculate that the report reflected an Army torn by the trials of Vietnam, a second study conducted at the Army War College by Major Melville A. Drisko in 1977 indicates that many problems exposed in 1970 still existed in 1977. Drisko reported that although 96.5 percent of his respondents felt at least adequately equipped to make responsible ethical decisions, most felt that the system did not reward that kind of decision. In fact, almost one-third of some 2200 respondents felt that the organization actually rewarded unethical be-

havior. Worse yet, almost two-thirds felt that ethical behavior or "telling it like it is" was actually dysfunctional because that behavior went unrewarded. The ethical problems most frequently mentioned by Drisko's respondents appear surprisingly similar to problems cited in the first report: "competitive pressures placed on officers, lack of integrity perceived in senior officers, career survival through statistics, and little tolerance for mistakes."[8] More serious than those problems was another concern, which Drisko expressed in his analysis: namely, that the Army system, rather than external contemporary sociological pressures, was the principal cause of unethical behavior in the officer corps. Because the ethical problems stemmed largely from internal pressures, Drisko stated, they would be solved only as the Army dealt with them honestly and directly.[9]

A number of surveys at Air University between 1974 and 1983 identified similar problems related to integrity and ethical norms in the Air Force. As a result, in an article titled "What the Captain Really Means . . . ," Major Peter Henderson concluded that among young officers there was a significant lack of faith in the integrity of Air Force management and leadership. Major Henderson based this conclusion on a survey of some 780 officers attending Squadron Officer School. Of 617 respondents, 61 percent indicated that they found it necessary at times to sacrifice their integrity in the interest of job requirements, while only 26 percent stated that they were not required to compromise their integrity. The officers indicated that they were pressured to compromise most frequently in reporting and documenting inaccuracies. They also felt that correction of the problem should begin at top management levels: 37 percent selected senior officers as the worst offenders.[10]

Major Howard M. Epstein surveyed students from Air War College (AWC), Air Command and Staff College (ACSC), and Squadron Officer School (SOS) in 1976 to determine Air Force officers' attitudes toward unethical behavior. One question asked whether the Air Force seemed to have a problem with unethical behavior. Overall, 58 percent felt that there was such a problem; but, as a group, company- and junior field-grade officers felt more strongly about the problem than did the AWC students. For example, 80 percent of the SOS students and 62 percent of the ACSC group felt that the Air Force had a problem with unethical behavior, but only 32 percent of the AWC students agreed.

In 1980, Majors Joseph R. Daskevich and Paul A. Nafziger designed a survey titled "The Pulse of Professionalism" to survey attitudes on professionalism among students in the PME schools at Air University. In addition to a wide range of questions on military professionalism, two questions pertained directly to integrity:

> Were you ever pressured by the "organization or senior officers" to compromise your integrity? How frequently do you think other officers compromise their integrity?[11]

The survey was administered again to an SOS class in 1980; to AWC, ACSC, and SOS classes in 1981; and to a class at the Senior NCO Academy in 1981. The Squadron Officer School continued to survey each of its classes after the initial survey in 1980 and used the results in a seminar on military professionalism during the last week of class. Although many classes were surveyed, the data from classes 83D and 83E are representative of previous classes and current company-grade officer attitudes. One can observe in Table I that company-grade officers in every survey felt less pressured to compromise their integrity than other participants did. But all groups perceived that others compromised their integrity to a greater extent than they themselves. Students at Air Command and Staff College and the Senior NCO Academy were the most pessimistic in their opinions of others. For example, 80 percent of two separate ACSC classes believed that others compromised their integrity sometimes or often. As a result of such data, General Gabriel requested further examination of the issue.

The surveys conducted at Air University

were not the only indications of growing concern over a lack of integrity in the U.S. Armed Forces. In fact, these surveys tended to support the views expressed by many other people in a variety of articles, speeches, memorandums, and journals. For example, General John D. Ryan, former Air Force Chief of Staff, made the following comment in a policy letter to his commanders subsequent to the Lavelle incident:

> Integrity—which includes full and accurate disclosure—is the keystone of military service. . . . We must not compromise our integrity—our truthfulness. . . . False reporting is a clear example of a failure of integrity. . . . Integrity can be ordered but it can only be achieved by encouragement and example.[12]

Lieutenant Colonel Monroe T. Smith addressed the problem of falsifying information in an article titled "Reporting Inaccuracies—A Rose by Another Name" in 1983. He indicated that the Air Force has a problem with honesty and integrity, preferring to call dishonest statements by another name—"inaccurate reporting."[13]

Chaplain (Major General) Henry J. Meade expressed a belief at the Corona West Conference in 1976 that the time had come to reassert integrity as a "lifestyle" for leaders throughout the nation. He indicated that integrity, as a total way of life, was getting more and more difficult to find.[14]

In papers presented to the Inter-University Seminar on the Armed Forces and Society in 1979, Sam C. Sarkesian and Thomas E. Kelly addressed military ethics in an institutional context. Sarkesian argued that military personnel belong to a society that more or less shapes its own view of integrity.

> If we accept the fact that personal integrity is developed from a variety of sources, not only from within the military, then there is an inherent tension between the concept of personal integrity, duty, honor, country, and officership. Thus, there can be times when the personal integrity of the military professional is confronted by the contrary demands of the profession, the institution, and the search for career success.[15]

Sarkesian went on to say that dilemmas between personal integrity and professional and institutional demands should not be rationalized under the deeply engrained concepts of obedience and professional loyalty. He cited such historical examples as Antigone, Socrates, and Sir Thomas More, who were willing to sacrifice their lives rather than submit to unjust institutional demands or laws.

Kelly directed his paper to the problems surfaced in the study by the Army War College and discussed in Major Drisko's 1977 report. Kelly suggested that the Army had not taken adequate steps to solve its problems and that institutional practices were continuing to pressure Army officers to compromise their integrity.[16]

In another 1983 article, Major W. H. Margerum, Jr., stated that a military officer simply cannot be a professional without integrity because "integrity is the foundation of the professional officer's character: it determines all that

Table I. Responses to Questions on Pressures to Compromise and Perceptions of Compromise

Were you ever pressured by the "organization or senior officers" to compromise your integrity?

	Never	Rarely	Sometimes	Often
ACSC officers 1980	13%	35%	67%	8%
SOS officers 1980	36%	32%	29%	3%
Senior NCOs 1981	23%	38%	33%	6%
SOS officers 1981	36%	32%	29%	3%
ACSC officers 1981	11%	27%	52%	10%
AWC officers 1981	30%	33%	30%	7%
SOS officers 1983*	45%	32%	22%	1%

How frequently do you think others compromise their integrity?

	Never	Rarely	Sometimes	Often
ACSC officers 1980	0%	20%	67%	13%
SOS officers 1980	2%	35%	54%	9%
Senior NCOs 1981	.5%	33%	56%	10%
SOS officers 1981	2%	35%	54%	9%
ACSC officers 1981	0%	19%	65%	16%
AWC officers 1981	3%	42%	51%	5%
SOS officers 1983*	1%	42%	52%	5%

*Combined statistics of SOS classes 83D and 83E

he is or ever can be."[17] Margerum's strong statement, combined with the large body of literature that establishes the existence of a problem and defines its nature, could lead one to conclude that the foundation of the officer corps is shaky at best and possibly crumbling at worst.

Common Themes on Integrity

Several basic themes dominate the recent literature on integrity. Most of the literature expresses a belief that a lack of integrity among professional military personnel was a serious problem in the 1970s and is still a problem. Another theme is the perception that military personnel most frequently violate principles of integrity by doing false reporting or knowingly documenting untrue actions or statistics. Still another view, which perhaps has the most significant and far-reaching implications, is that the military institution exacerbates the problem.

Majors Hudson, Hull, and Stevenson either directly or indirectly address their basic themes in their report. Table II shows the extent to which a lack of integrity is perceived as a problem in the Air Force: only 35.5 percent of all of the respondents were absolutely sure that integrity is really a problem. However, in cross-tabulating this information, Majors Hudson, Hull, and Stevenson found that while the *officer* population as a whole was evenly divided on this question, with 33 percent for each response, the noncommissioned officers by a two-to-one margin (46.5 percent to 21.5 percent) felt that integrity is a problem in the Air Force. The senior officers from the Air War College responded quite differently from the noncommissioned officers: by a margin of 46 percent to 21.5 percent, they stated that integrity is not a problem in the Air Force.[18]

These data provide a clear signal that integrity is a serious problem facing the officer corps. Whether a lack of integrity in the Air Force is real or perceived, the discrepancy between the population of senior noncommissioned officers and senior commissioned officers suggests a serious situation that needs attention. All groups recognize that the Air Force should teach the principles of integrity (see responses for question 7, as well as those for related questions 5, 16, and 17), but roughly half of the participants felt that the Air Force places too little emphasis on integrity. Although 88.5 percent felt at least adequately equipped to deal with questions of integrity in the Air Force work environment, 76.3 percent

3. Is integrity really a problem in the Air Force?

31.5%	a. No
32.5%	b. Not sure
35.5%	c. Yes

5. The amount of emphasis placed on integrity by the Air Force is

44.5%	a. Too little
52.0%	b. About right
2.5%	c. Too much

6. How well equipped do you feel to deal with integrity questions in the Air Force work environment?

2.5%	a. Totally unequipped
10.0%	b. Poorly equipped
35.5%	c. Adequately equipped
41.0%	d. Well equipped
12.0%	e. Very well equipped

7. Should the Air Force be teaching "integrity?"

17.0%	a. No
15.5%	b. Not sure
66.5%	c. Yes

16. While associated with the Air Force, have you ever been pressured to compromise your integrity in a job-related situation?

23.7%	a. Never
43.0%	b. Rarely
30.6%	c. Sometimes
2.7%	d. Often

17. After being pressured, did you compromise your integrity?

34.4%	a. Never
40.9%	b. Rarely
22.7%	c. Sometimes
1.7%	d. Often

Table II. Responses to Questions in "Integrity—The Pressures to Compromise"

still felt pressured to compromise their integrity. Of that group, at least 65 percent (or roughly half of the total respondents) did, in fact, compromise their integrity at least "rarely."

In addressing the second major theme, Majors Hudson, Hull, and Stevenson categorized specific incidents in which integrity was an issue (see Table III). Of the 781 people who participated in the survey, 350 also provided written accounts of incidents that they had personal knowledge of. The authors categorized these responses in six major groupings: dishonesty, unfair actions, poor judgment, disloyalty, personal interests, and others. Most of the responses (55.7 percent) reflected "dishonesty" (Group I), and the category "false reporting" received 42.4 percent of that total. These data confirmed views expressed in some of the literature on integrity. The Army studies, comments by General Ryan, and articles by Major Henderson and Colonel Smith listed false reporting as perhaps the most commonly occurring breach of integrity in the military. The following comments are representative of other categories included under the "dishonesty" general heading:

> DCM indorsed artificial readiness figures of his airframe fleet. Aircraft were reported OR [operationally ready], whether they were or not, every Friday night to eliminate weekend down-time.
>
> * * *
>
> I did not enforce the overweight program as vigorously as I should have in my squadron. I was CC [component commander]. I went through the motions of the program, but did not fully prosecute the situation. There was no pressure on me to do this.
>
> * * *
>
> As a fledgling in AFSC [Air Force Systems Command], I was involved with my boss in continual violation of AFR 30-30 [Standards of Conduct]. Defense contractors wined and dined our office either in pursuit of contracts or to pacify the boss on program of extant contracts.

The second major group of integrity-related incidents—"unfair actions" (personnel)—drew only 17.4 percent of the total responses. Most of the incidents involved either inaccurate evaluation/recommendation or discrimination/favoritism. The following incidents are representative of this major group:

> The squadron commander advised me that I must join the NCO club to have my APR [airman performance report] endorsed by the DCM [deputy chief of maintenance] and/or the Wing Commander. I refused because I did not feel my membership in the NCO club should have anything to do with my APR. I was an E-7 at the time. He again approached me just prior to taking my APR to the CBPO [consolidated base personnel office].

Table III. Types of Compromise Found in "Integrity—The Pressures to Compromise"

Group I—Dishonesty 55.7%
- False reporting (42.4%)
- Theft/misappropriation (3.7%)
- Offering/accepting favors or bribes (2.2%)
- Other (5.2%)
- Tolerating (witnessing or knowing of integrity breaches) (2.2%)

Group II—Unfair Actions (Personnel) 17.4%
- Inordinate influence to contribute/join (1.5%)
- Sexual harassment (.4%)
- Discrimination/favoritism (5.2%)
- Inaccurate evaluation/recommendation (8.9%)
- Other (.7%)
- Tolerating (.7%)

Group III—Poor Judgment 4.6%
- Sexual misconduct (1.1%)
- Drug abuse (.2%)
- Other (2.6%)
- Tolerating (.7%)

Group IV—Disloyalty 3.9%
- Security matters (2.4%)
- Toward others (.9%)
- Other (.2%)
- Tolerating (.4%)

Group V—Personal Interests 15.0%
- Unauthorized/unnecessary use of government vehicles (2.2%)
- Unauthorized/unnecessary use of other government property (.2%)
- Use of rank/position for personal gain (3.5%)
- Use of rank/position to circumvent "the system" (ignoring regulations, plus others) (7.4%)
- Other (.4%)
- Tolerating (1.3%)

Group VI—Other 3.5%
- (All incidents not included in above categories.)

• • •

I was told to hide an obese TSgt during an IG [inspector general] visit because his presence in the unit would distract unnecessarily from favorable impressions. My boss gave the NCO a 4-day pass, i.e., not leave.

• • •

As a supervisor of both officers and airmen in a flying squadron, I felt I somewhat compromised my integrity when rendering evaluation reports. If I had rendered what I consider truthful reports, my troops would not have been competitive for promotion.

"Personal interests" was the next largest group having integrity-related incidents, with 15 percent of the responses. These three incidents are representative of this category:

A C-141 pilot transported his household goods and diverted an aircraft from its prearranged schedule. I was ordered not to report it for investigation or to upchannel it as required by regulation.

• • •

I had a boss who was moonlighting on government time, and he pressured me to cover for him. I did not turn him in, but when he was found out, I did not lie to cover for him as he wanted me to.

• • •

As a member of a high-level staff, it was necessary to develop fictitious reasons to support aircraft procurement figures provided to Congress even though new attrition projections indicated that the original aircraft buy was no longer necessary.

The percentage of responses in the categories of "poor judgment," "disloyalty," and "other" was relatively small, but the behavior described by the respondents has serious implications for effective professional relationships. The following incidents were included under the "poor judgment" and "disloyalty" headings:

My squadron commander ordered a search of the enlisted barracks. The search identified two enlisted members possessing cocaine. My squadron commander never reported the incident.

• • •

As a base contracting officer, I advised a contractor that he and his staff could not eat at the dining hall. The contractor had the contract for running the dining hall but not all the individuals who ate at the dining hall worked on the dining hall contract. I was in compliance with an Air Force regulation and was supported by two full colonels and two different JAG [judge advocate general] officers. The contractor complained to a congressman. As a result, the two colonels said I made the decision. I was legally right but politically wrong.

Although approximately one-half of the respondents stated that they probably would compromise their integrity again in similar circumstances, they rejected, by a two-to-one margin, the idea that the ends justify the means. This discrepancy is somewhat puzzling since the respondents listed their primary motivating factors as protection of careers, concern for organizational images, protection of bosses, and performance of jobs in spite of the regulations. Does this apparent contradiction mean that self-preservation and organizational image must be primary concerns at any cost? It seems to suggest support for the third theme—that the military institution itself exacerbates the problem, as some of the Army studies and military sociologists suggest. Table IV lists several questions and responses that support this contention. Examination of questions 10 through 15 shows the tendency of the respondents to take a situational stance in dealing with breaches of integrity. They were much more likely to deal openly with the problem if a breach of integrity involved a fellow worker or subordinate (questions 12-15). And the reasons for that tendency were predominantly to "maintain the standards of integrity." On the other hand, 35 percent of the participants would not pursue a breach of integrity if they had to confront the boss with a difficult decision. And the primary reason was fear of retaliation. This finding suggests that the open-door policies maintained by bosses may not be as effective as they should be. It also seems to support the idea that institutional pressures may be responsible for the refusal of many officers to address hard questions of integrity.

The implications of these themes on integrity for the commissioned and noncommis-

sioned officer corps are enormous. In our democratic nation, the military must keep civilian leaders informed of its capabilities and preparations to carry out military operations in support of foreign policy. Absolute integrity is a must. While commissioned and noncommissioned officers must have faith in their corporate abilities, they must also have the courage to point out shortcomings. Not only is honesty necessary in the arena of national decision making, but also the corporateness or unit cohesion that is the heart of a combat unit cannot exist in an atmosphere of dishonesty and distrust. Although the data suggest that a lack of integrity is not an all-pervasive problem in the professional officer corps, instances of pressures and the reasons for succumbing to these pressures are much too numerous for the good health of the corps.

Table IV. Responses to Questions in "Integrity—The Pressures to Compromise"

10. If you detect a breach of integrity in your boss, would you be more likely to

61.5% a. Deal with it openly, or
35.0% b. Let it lie

11. Why? _____

Reasons for a.		Reasons for b.
21.0%	No answer	19.0%
60.0%	Maintain standards of integrity	1.0%
7.5%	No fear of retaliation	.5%
1.0%	Fear of retaliation	49.0%
.2%	Apathy	16.5%
10.0%	Other	14.0%

12. If you detect a breach of integrity in a fellow worker, would you

86.5% a. Deal with it openly, or
10.0% b. Let it lie

13. Why? _____

Reasons for a.		Reasons for b.
17.5%	No answer	38.5%
58.5%	Maintain standards of integrity	2.5%
18.0%	No fear of retaliation	1.5%
.5%	Fear of retaliation	5.5%
.5%	Apathy	37.0%
5.5%	Other	15.0%

14. If you detect a breach of integrity in a subordinate, would you

93.0% a. Deal with it openly, or
5.5% b. Let it lie

15. Why? _____

Reasons for a.		Reasons for b.
18.0%	No answer	39.5%
71.0%	Maintain standards of integrity	26.5%
6.5%	No fear of retaliation	10.5%
.0%	Fear of retaliation	2.5%
.1%	Apathy	13.0%
4.5%	Other	8.0%

An Improved Climate For Integrity

The responses in "Integrity—The Pressures to Compromise" cry out for clear institutional reforms to encourage integrity among military professionals. If people feel threatened by their environment, burdened by unenforceable regulations, and led by superiors with questionable integrity, commissioned and noncommissioned officers will continue to struggle for survival in an unhealthy climate. What can be done to improve the climate and reduce pressures that cause many Air Force members to compromise their integrity?

The answer to that question has obviously eluded leaders of the officer and noncommissioned officer corps over the past decade, if indeed there has ever been any real concern or desire to change the climate. Past solutions have focused on speeches, comments in various journals, and cursory attempts to teach proper actions in all military schools and professional military education courses. Notable exceptions, of course, are the service academies, where students live and breathe strict honor codes for four years. But the data indicate that little has changed during the past decade.

The current Chief of Staff indicates a strong desire to make integrity the "fundamental premise of military service in a free society." Thus, the first step has been taken. Senior leadership supports the exercise of integrity throughout the Air Force. But the second step is uncertain. Will each link in the chain of

command down to the airman basic now apply principles of integrity?

There are a number of ways to expedite the process. The authors of "Integrity—The Pressures to Compromise" suggest that integrity must be taught at all levels of the Air Force from accession program through senior PME schools. But instruction cannot be limited to the classroom. Setting the example on the job and rewarding ethical behavior must become integral parts of the workplace, and that responsibility falls directly on the shoulders of the commander, who must be selfless in relating to his unit. For example, if a commander knows that his unit is ill-prepared to carry out its responsibilities because of either poor equipment or unqualified people, he is obligated to report the status of the unit to his superiors. Of course, he should also discuss his plans for improving the situation, and senior leadership must then give him an opportunity to implement his plans. Holding commanders accountable for their units may require more than one-year "ticket-punching" tours; the additional time would allow commanders to establish rapport with their people.

This improved rapport would perhaps help to reduce the threat perceived by many officers that ethical choices and adherence to the standards of integrity might become obstacles to their survival in the Air Force. The authors contend also that too many people fear the consequences of failure and an inability to perform at 100-percent efficiency. The atmosphere of competition in today's Air Force encourages many people to compromise their integrity in order to remain "in the running." To counter this trend, the authors suggest that the Air Force "continue to encourage an open dialogue to explain why a certain action is necessary. Extend a helpful atmosphere to get the job done right rather than creating an 'or-else' environment."

The final recommendation is that the Air Force should review all regulations and revise or eliminate those that cannot be enforced or are not enforced universally. Many respondents felt that they had to bend the system or "cheat a little" to perform their jobs in total conformity with regulations, especially with respect to paperwork. On the other hand, essential regulations must be strictly enforced. The authors suggest Air Force-wide screening of consistently "pencil whipped" requirements and modifying essential requirements to ensure universal enforcement.

Significant change comes slowly to bureaucracies, yet drastic changes seem necessary to weed out some of the institutionalized practices that impose undue pressure on Air Force people. The atmosphere can change perhaps when commanders clearly demonstrate their integrity and responsibility for their people and their missions and when Air Force members recognize that integrity is rewarded behavior. The changes may be only incremental from year to year, but if continuing, observable changes become the rule rather than the exception, surveys in 1994 will reflect tangible improvements instead of mere talk about the problem.

Fairchild AFB, Washington

Notes

1. General Charles A. Gabriel, USAF, *TIG Brief*, 10 October 1983, p. 2.

2. Majors Donald W. Hudson, Gerald E. Hull, and Robert L. Stevenson, "Integrity—The Pressures to Compromise," Maxwell AFB, Alabama: Air Command and Staff College, 1983, pp. 2-3. The "nearly 90 percent" finding that General Gabriel alluded to was derived from a 1981 Air Command and Staff College survey.

3. Ibid., p. 3.

4. Majors Joseph R. Daskevich and Paul A. Nafziger, *The Pulse of Professionalism* (Maxwell AFB, Alabama: Air Command and Staff College, 1980), p. 14; Hudson, Hull, and Stevenson, pp. 20-21, 29.

5. *Study on Military Professionalism* (Carlisle Barracks, Pennsylvania: Army War College, 30 June 1970), pp. v, 1.

6. Major Francis B. Galligan, U.S. Army, *Military Professionalism and Ethics* (Norfolk, Virginia: Naval War College, June 1979), p. 12; *Study on Military Professionalism*, p. 12.

7. SOS Officership Nonresident Course Book—Phase II (Maxwell AFB, Alabama: Air University, April 1982), p. 35.

8. Major Melvin A. Drisko, "An Analysis of Professional Military Ethics: Their Importance, Development, and Inculcation," Carlisle Barracks, Pennsylvania, Army War College, 19 June 1977, pp. 38-40.

9. Thomas E. Kelly III, "Ethics in the Military Profession: The Continuing Tension," paper presented to the Inter-University Seminar on the Armed Forces and Society, Maxwell AFB, Alabama, 4 June 1979, p. 7.

10. Major Peter Henderson, "What the Captain Really Means. . ." *Air University Review*, January-February 1976, pp. 96-101.

11. Daskevich and Nalziger, p. 14.

12. General John D. Ryan, *Air Force Policy Letter for Commanders* (Washington: Government Printing Office, 1 November 1972). General Lavelle was running the air war during the latter years of the Vietnam conflict and issuing orders on rules of engagement that were in conflict with stated national policy. His reports, however, never indicated what was really happening. A sergeant who worked in the general's chain of command refused to continue falsifying reports and exposed him.

13. Lieutenant Colonel Monroe T. Smith, "Reporting Inaccuracies—A Rose by Another Name," *Air University Review*, January-February 1983, pp. 83-88.

14. SOS Nonresident Course Book, p. 36.

15. Sam C. Sarkesian, "Moral and Ethical Foundations of Military Professionalism," paper presented to the Inter-University Seminar on the Armed Forces and Society, Air University, Maxwell AFB, Alabama, 3-5 June 1979, pp. 18-19.

16. Kelly, p. 4.

17. Major W. H. Margerum, Jr., "Integrity: The Military Professional and Society," *Air University Review*, September-October 1983, p. 79.

18. Hudson, Hull, and Stevenson, pp. 17, 20, 23, 24, 38, 39, 41.

COST ANALYSIS: CHALLENGE AND RESPONSE

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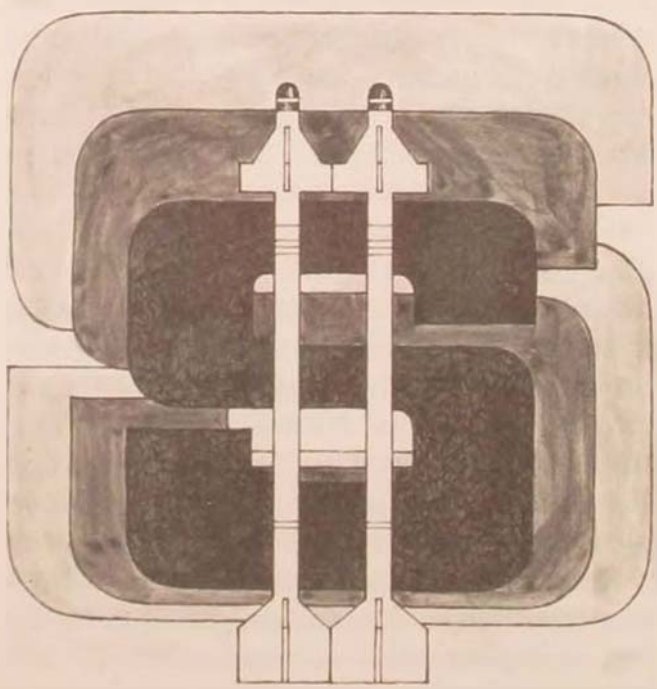
HARDLY a week goes by that a critic of DOD spending does not make public an alleged cost growth or budget overrun on a weapon system. The basis for such charges can come from a wide variety of sources, but it inevitably focuses on a cost estimate performed during some phase of system development and acquisition. Regardless of the validity of the claim, the net result has almost always been the same—DOD in general and the cost analysis community in particular have entered a "defensive posture," setting forth explanations in the best case and excuses in the worst.

Is this situation of interest to those not directly involved in the cost analysis arena? Yes! While the Department of Defense currently enjoys a moderate amount of public support for its force modernization programs, that support should be viewed as only fragile and fleeting in nature. Unless there is a dramatic, sustained shift in societal priorities and public perception of the threat facing the United States and its allies, public (and congressional) support for defense budgets will continue only as long as DOD demonstrates sound fiscal responsibility in its execution of planning, programming, and budgeting activities. As an integrating function in an environment like that of DOD (i.e., where increasing needs confront budget restrictions), cost analysis has emerged as a relatively new, but vital, science of increasing importance as a management tool. This rise in stature has brought with it both problems and opportunities, requiring careful consideration of how and when this resource should be used.

Make no mistake about it—cost analysis is assuming a much greater role in the defense decision-making process. Congress has stated that the Secretary of Defense (SECDEF) may not approve the full-scale development, production, or deployment of a major defense acquisition program unless an independent cost estimate of that program has been performed and submitted for review by DOD authorities and review panels. Further, SECDEF had to submit a written report to Congress in May 1984 on the use of cost estimates in the budget process. (DOD anticipated this requirement to some extent when the Defense Resources Board decided in a November 1981 decision to have independent cost analyses to support the annual budget cycle in addition to the Defense Systems Acquisition Review Council process.) Finally, Congress has stipulated that adequate resources and personnel be allocated at all



levels of DOD to ensure that the required level of cost analysis effort is maintained.

The DOD charter is thus stated clearly. The questions to be answered are why it had to be stated in the first place, what has been done to meet these explicit directions, what challenges remain, and what responses to those challenges might ensure an effective cost analysis function within DOD.

Current DOD Environment

Cost growths and budget overruns directly negate the best efforts of DOD to achieve the superior fiscal responsibility that Congress and the American public desire. Not only is public support for DOD undermined, but the proverbial vicious circle is initiated. For every substantial program cost increase incurred, one or more other programs must be changed within the planning-programming-budgeting system (PPBS) to accommodate that increase, thereby setting off a chain reaction. For example, lower-priority programs that may have been established with efficient production rates are reduced in scope or stretched out, making them less efficient and more costly. This change, in turn, affects other programs, reducing the efficiency and increasing the cost of each. The end result is an accommodation of the total service DOD budget for any given year, but at the expense of increasing unit and total program costs in the long run.

It is possible, of course, that an initial program cost increase (actual or projected) will result in a major change in the content of the priority program likely to create the budgetary difficulty, thereby avoiding an adverse impact on other acquisition efforts. However, a cursory review of the DOD track record reveals that such program changes have been the exception rather than the rule. While a certain degree of program restructuring has occurred to meet near-term budget constraints, there has been a very strong tendency to slip remaining program requirements to the relatively uncontrolled "outyears." The result has almost always been the same: increased unit and total program costs.

The "fix" for this scenario can assume many forms, ranging from technological innovation to closer program control. However, all roads eventually lead to the program cost estimate and its degrees of accuracy and reliability. Recognizing this premise, senior officials have mounted drives periodically to improve the business of cost estimation. At the highest levels, there have been flurries of proposals and initiatives, most of which, quite frankly, have met with limited success, if only because of the bureaucratic delay between the initiation of a change in the field and its receipt/implementation by those affected by it the most—the analyst force. Middle echelons of the cost analysis community have tended to react to criticism through reorganizations and a call for the development of new models and techniques. Again, with limited success.

There have been two primary reasons for the relatively minor impact of many recommended changes. First, the changes too often have been of such a broad, sweeping nature that they have tended to generate as many problems as they solve. This particularly has been the case with high-level directions which tend to be management-oriented (rather than analysis-oriented) and which frequently result in a plethora of new, time-consuming studies, reports, and requirements, adding to an already substantial workload and further diluting the effectiveness of analyst work. (There has also been some question by those in the field as to whether these additional reports and requirements are needed or used at all.)

The second reason for the limited effectiveness of command initiatives is related to (if not caused by) the first. Simply put, the pool of *experienced* cost analysts has been too small to allow for the gratuitous addition of new requirements. More often than not, the existing analyst work force operated essentially in a reactive mode to its workload, handling those pro-

jects and estimates that generated the most heat. Adding requirements without increasing qualified manning simply exacerbated the situation. Gradually, it became recognized that until the numbers and experience levels of cost analysts were increased, DOD's ability to improve its cost analysis function and produce genuine cost savings would remain limited.

Challenges

Higher-level initiatives and middle-echelon efforts to improve the cost analysis business have tended to focus on organization and procedures in an ad hoc manner. As such, they have addressed the effects or, at best, surface causes of the problem. To really improve the quality of cost analysis within DOD, five major areas need to be considered.

personnel factors

As indicated earlier, there can be very little real increase in both the quantity and quality of cost analyses until the quantity and quality of cost *analysts* increase. Until recently, the total output of the cost analysis community represented essentially a zero sum game: the quantity of estimates could be increased (a common ploy in an attempt to avoid unexpected cost growth or budget overruns), but the quality of those estimates decreased in a proportionate manner. This situation was aggravated by the time constraints often placed on an estimate, forcing a less than in-depth analysis of requirements. A good analysis requires adequate time for a detailed review and study of the weapon system of concern, its associated requirements, and its impact on related systems. The recent environment of limited manning in relation to increased, time-sensitive requirements simply did not permit such a "luxury."

The current environment is improving, however. Commanders at all levels have recognized the importance of the cost analysis function and have committed considerably greater resources to it than in the past. In addition to enhanced recruitment efforts, specialized training has been expanded to ensure professional stature, expertise, and methodological currency. At least one service, the U.S. Air Force, has established a master's program in cost analysis. The basic issues of manpower and training have finally been addressed.

systemic factors

The overall problem of accurate, reliable cost estimation is not solved by a simple addition of analysts. Other factors need attention also. The previously mentioned time crunch was often accompanied by a request for an estimate on an incompletely defined system or a system that was years away from actual production. Given the increasing lengths of time for weapon system development and acquisition in general, and the two-year span between program office budget submission and execution in particular, difficulty in producing accurate estimates is a fact of life that the analyst must face. Still, nothing is more frustrating to a conscientious analyst than being asked to cost a system that has yet to be fully designed or that lacks a firm concept of operations for employment.

Such a situation is not uncommon and demands far more than simple calculation of possible variables. The analyst is certain that there will be changes in system direction, scope and schedule but cannot support sufficient precautionary (or, management reserve) costs to allow for such changes. If the program is so ill-defined or technologically uncertain as to demand a large management reserve, the limited total funds for all programs serve to severely constrain the analyst and decision maker in the full allotment of required funds to cover the uncertainties adequately. This tendency toward conservative estimates is especially present during the early stages of system development, when requirements and associated costs can be slipped to the "outyears" of a program. As a result, early system cost estimates have almost

always been less than subsequent estimates or actual costs, providing a built-in factor for cost growth/budget overruns.

The obvious solution to this problem is to either delay the system cost estimate or provide considerably greater program definition at the time that the estimate is accomplished. Unfortunately, the requirements of the decision-making environment, limited resources, and the PPBS/selected acquisition report (SAR) cycles effectively preclude both alternatives. Each of these factors places great emphasis on the establishment of a cost and requirements baseline during the early stages of system development through the development of preliminary estimates. While the use of a preliminary baseline is a step in the right direction, it cannot be totally rigid. Preliminary estimates must be recognized for what they are—somewhat refined but nonetheless conceptual analyses of a weapon system, suitable primarily as an internal control mechanism. The original problem of program changes in terms of scope, direction, and schedule open to public inspection still exists.

Given the amount of money required to develop and acquire a modern weapon system, Congress and the public are certainly justified in their demands for preliminary estimates and baselines. On the other hand, it must be recognized that changes will occur for many, valid reasons—some of which originate through the annual, congressional budget approval process. The key point, though, is that there must be recognition and understanding of the need for changes and successive baselines.

A public and a Congress educated to expect budgetary revisions would not mean that the services abdicate all responsibility for those changes and the subsequent control of cost growth. Rather, each service and program management structure must be held responsible for fully explaining the reasons for cost growth (especially those over which they can exercise control) at each major stage in the development and acquisition process. In turn, Congress and the public would need to recognize the impact of external forces on a program.

Given such a sharing of responsibility, however, the problem still exists of setting a *final* baseline against which all key parties can be held accountable. Ideally, this baseline would permit the development of accurate cost estimates but still provide sufficient time to cancel a program if further development or acquisition proved to be unwarranted. An appropriate time at which to establish this final cost/requirements baseline would be after system development and testing (but prior to full-scale production)—the point in the acquisition process known as DSARC III. At this juncture in the system acquisition process, it would be possible to develop a baseline composed of both firm costs *and* firm requirements. Use of this somewhat delayed point in the weapon system acquisition process would not eliminate all unknowns but would certainly account for the majority of them. In addition, it would offer the advantage of a limited production run on which to project actual costs.

technical factors

The cost analyst is hampered by still another set of constraints. Given enough time, data, and expertise to use them, the tools of the cost analysis trade can be formidable in their scope and depth. Analysts in both private industry and government have developed a wide array of mathematical techniques and computer models to draw on during the course of an estimate. The chief drawback is that existing models may not be appropriate for a relatively new or unique weapon system or production process. Forcing a system to fit a model, or vice versa, can result in a rather strained estimate with a questionable level of confidence. The obvious solution to this problem is to develop new techniques and models. However, doing so requires a further siphoning of scarce analyst resources—an option not available to a manager facing a series of higher headquarters' tasking deadlines.

If a suitable mathematical technique and model can be found or developed, the next hurdle to be cleared is that of data. As a preliminary step, the analyst must research and establish a data base that permits the identification or derivation of reliable relationships on which to form an estimate. This major task, requiring a detailed understanding of the program, often determines what technique or model will be used for the actual work of estimation. Unfortunately, the limited time available for research has led to a greater reliance on data bases of questionable relevance to new systems, materials, and production processes.

If a weapon system or production program is sufficiently defined or analogous to another so that a reasonable data base can be established, there is still another factor that has often caused an eventual cost growth or budget overrun: OSD inflation rates as directed by the Office of Management and Budget (OMB). While the use of these rates has permitted a high degree of standardization, they have in the past invariably reflected the goals of the executive economic program rather than the (normally higher) rates that would be realistically expected. Until inflation began declining recently, the resulting understatement of costs in outyears virtually guaranteed the grist for critics' assertions of poor government control of public funds.

task factors

As an integrating element between the activities of planning, programming, and budgeting, the cost analyst develops a rather detailed knowledge of an overall program. While this knowledge can be personally rewarding and can bring an analyst a certain degree of stature, it can also inhibit the effective performance of the analyst's primary duties. As a result of this extensive knowledge base, an analyst will frequently be required to participate in such time-consuming activities as special studies, budget scrubs, program reviews, and source selection panels. While participation in these activities is both necessary and desirable, they all detract from the time available for an analyst to perform assigned cost research and estimation tasks. Furthermore, perhaps of greater long-term significance, the press of additional duties can preclude time for research and professional development, to the detriment of the individual analyst, the overall profession, and future end products—reliable, accurate estimates.

professional factors

The list of problems related to analysis work could be extended further, but the point to note is that the field of cost analysis is essentially striving to establish a solid foundation on constantly shifting sand. This situation arises because of rapidly changing programs, data bases, and duties. What is not commonly realized is that the analyst force itself also tends to be highly variable because of frequent changes in its composition.

Although the absolute number of analysts is slowly increasing in response to a rapidly increasing workload, the overall quality of the analyst work force has remained relatively constant. There are several reasons for this. For one thing, the degree of professional status attributed to a cost analyst has been very slow to develop. It has been only in the very recent past that rigorous, professional requirements for analysts have been established. Second, although the number of analysts has increased on an

absolute basis, many of the newcomers are still in training. The training period required to develop a well-qualified analyst is considerable and, in some cases, has been lengthened because of an overly aggressive recruiting program that has resulted in the entry of minimally qualified personnel. The cost analysis function needs more than mere manpower—it needs *skilled* manpower. The third reason for the general lack of improvement in work force quality is that both the military and the civilian personnel systems have failed to treat the field of cost analysis as a separate career field. This policy has tended to generate a transitory work force en route to other areas. Inexperienced personnel enter the field of cost analysis from a variety of backgrounds, receive specialized training, and then depart at just about the time they reach a level of true competency. This sequence is particularly common on the military side of the house, at both the worker and the supervisory levels. This type of situation is discouraged in such disparate areas as engineering, budget, and flying; it should not be allowed in the critical field of cost analysis.

Contract Analysts/Consultants: A World of Two-edged Swords

To alleviate the problem of obtaining skilled manning, it is frequently suggested that DOD use outside contractors on a more frequent basis. In fact, there has been a trend toward the increased use of and reliance on contracted analysts and consultants. While recourse to such sources of data and analyses can mitigate the problems of manning and time constraints significantly, there are several disadvantages in relying on outside "experts":

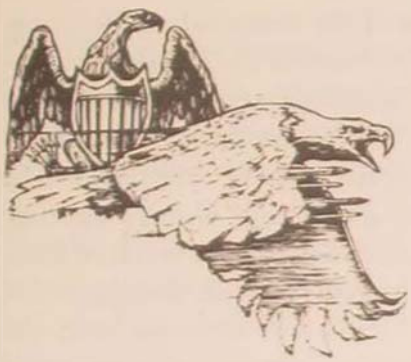
- time required to brief system specifications and requirements fully,
- cost of the initial study and subsequent contractor updates,
- need for DOD manpower to monitor contractor progress,
- access by the contractor to other contractors' proprietary data bases,
- access to contractor data bases and models by DOD or an independent consultant to validate an estimate, and
- relative lack of consultant accountability with regard to analysis results.

In short, the use of external consultants may provide an alternative to the conduct of cost analyses, especially if an independent analysis is required, but it is not a panacea to all problems. Specifically, it does not solve the overall problem of DOD manning and experience levels. Instead, it may very well complicate the problem. As these external groups develop the skills and capacities to perform more detailed and complex estimates, senior executives and decision makers tend to assume that more estimates can be tasked. The resulting increase in requested analyses, however, is bounded by the absolute number of studies that both government and external analysts can perform. To meet increased commitments (and increase their profit margins), external consultant organizations and industrial firms seek to build their corps of experienced analysts. The predictable result is a series of "raids" on a ready source of such scarce talent, government analysts. The previously mentioned exodus of trained analysts is thus exacerbated by contractor/industry lures of greater professional recognition, shorter hours, higher pay, better administrative support, and so on.

In effect, then, the unchecked use of external consultants can actually weaken the in-house cost analysis capability of DOD. Further, this drain on the analyst force is additive to the normal pull of industry in its attempt to meet the insatiable government demand for contract estimates and reports.

Meanwhile, for those analysts remaining within the DOD cost analysis community, another problem of both a personal and professional nature often occurs. The primary task of a cost analyst is to provide a comprehensive,

objective estimate for use by decision makers. The analyst is theoretically not tied to a budget constraint during the conduct of an analysis, but funding limitations are never far from the analyst's mind. The net result is that the analyst is effectively caught in the squeeze between expanding needs and a relatively fixed budget. Viewed from any perspective, this is not a comfortable position. Being neither an adversary nor an advocate of a program, but supplying data for both, the analyst is in a "no-win" situation.



In an effort to match increasing needs to a relatively fixed budget, the analyst is frequently tasked to provide several program cost estimates for management consideration. This responsibility requires the assistance of a variety of functional experts to identify and tailor key parameters before an analyst can produce estimates reflecting a variety of program contents, schedules, and configurations. This task is not very difficult for an experienced analyst until the variables of conflicting interests, multiple program elements, and minimum levels of system utility are included. With the addition of factors such as these, the analyst's job is expanded to that of a referee and negotiator—a classic no-win position that pleases no one, least of all the analyst.

It should be noted also that, on occasion, the needs-budget squeeze can become exceedingly tight and require a large measure of both personal and professional integrity. Such a situation can arise in a number of ways, but most involve pressure on the analyst. One of the most common "suggestions" is to reduce or eliminate costs to fit a preconceived total or a total that will "sell," and to try to hide costs by spreading them among several program segments, thereby reducing the total under any one heading. While such situations are not an everyday event, their occasional appearance can present an analyst with some very interesting choices of a personal and professional nature.

Responses: The Best Defense Is a Good Offense

The preceding narrative is not meant to portray cost analysts as victims of a terrible plot to drive them to an early grave. Rather, it is designed to stress the need for more analysts and better analyses. But what would be the end result of such increases, and whom would it benefit?

Both questions can be answered succinctly by stating that an enhanced cost analysis function will yield greater *cost realism*. In turn, cost realism can reduce perceived cost growth significantly, promote funding stability, mute the myriad critics of military spending, and permit DOD to rise from its all-too-familiar defensive posture.

However, flooding the hallways with more analysts and cost estimates will not automatically guarantee more accurate, realistic analyses. This goal can be achieved only through the involvement and assistance of all disciplines. There is, and will continue to be, a real need for technical support from others (e.g., programmers, engineers, and procurement specialists) to handle the increasing complexity of weapon systems, manufacturing processes, and the business environment. In addition, the "system" must be stabilized through the firm institutionalization of program/funding baselines, independent schedule and technical assessments, and hard-nosed decisions (e.g., program cancellations). In short, a total

team effort is required if the goals of cost realism and funding stability are to be attained.

Fortunately, a coordinated, team effort to *control and reduce* costs, rather than merely accommodate them, has begun to materialize. Starting with the "Carlucci Initiatives" of several years ago (and subsequently streamlined by former Deputy Secretary of Defense Paul Thayer), a concerted effort at all levels has been under way to bring cost growth under control while enhancing the DOD cost analysis function. Examples of these efforts have been already mentioned, but a short listing of additional accomplishments should prove the point.

- Expansion of the requirement for selected acquisition and unit cost reports on major weapon systems to provide closer tracking of (and accountability for) program requirements and costs.
- Establishment of AFR 800-25, *Program Baselines*, to prevent program cost growth from "rolling forward" into relatively uncontrolled outyears or being covered within the Five Year Defense Program at the expense of other programs.
- Authorization and funding to hire and train additional cost analysts throughout the DOD structure.
- Establishment of a new staff function, acquisition logistics, to plan and control operations and support costs from the outset of weapon system development.
- An Air Force Systems Command-sponsored study, Affordable Acquisition Approach (A^3), to pinpoint the reasons for cost growth.
- The Hq AFSC Project Cost program and the corresponding field effort, known as Task Force Alpha, to reduce costs in all aspects of the acquisition process.
- Establishment of additional independent cost analyses to support Defense Resource Board deliberations and decisions.
- Allocation of funds for cost research to develop new data bases and estimating models suitable for today's development and acquisition environment.

It is very easy to blame cost growth on "the other guy" or factors beyond the program manager's and DOD's control. That is a defensive strategy. DOD needs to continue its coordinated *offensive* to establish fiscal integrity and maintain public support for its needed programs.

CLEARLY, the role of the cost analysis function has come to the forefront of the DOD decision-making process. A change such as this affects far more than just the cost analysis community. Continued recognition of the importance of this function will go a long way in solving many difficult problems at many levels of decision making and management. In turn, the solution of these problems will increase both the quantity *and* quality of future cost estimates and improve subsequent financial performance.

This matter is not a trivial concern. The long-standing conflict between increasing needs versus a fixed budget is not likely to disappear in the foreseeable future. Similarly, critics of the DOD planning-programming-budgeting process will always be ready to jump on any perceived financial irregularity as an unwarranted cost growth or budget overrun. As the middlemen between needs identification and the budget process and as one of the major groups contributing to the defense decision-making process, cost analysts and their technical counterparts must be ever more timely and accurate with their estimates. Continuous improvement is never easy, but DOD cannot afford anything less.

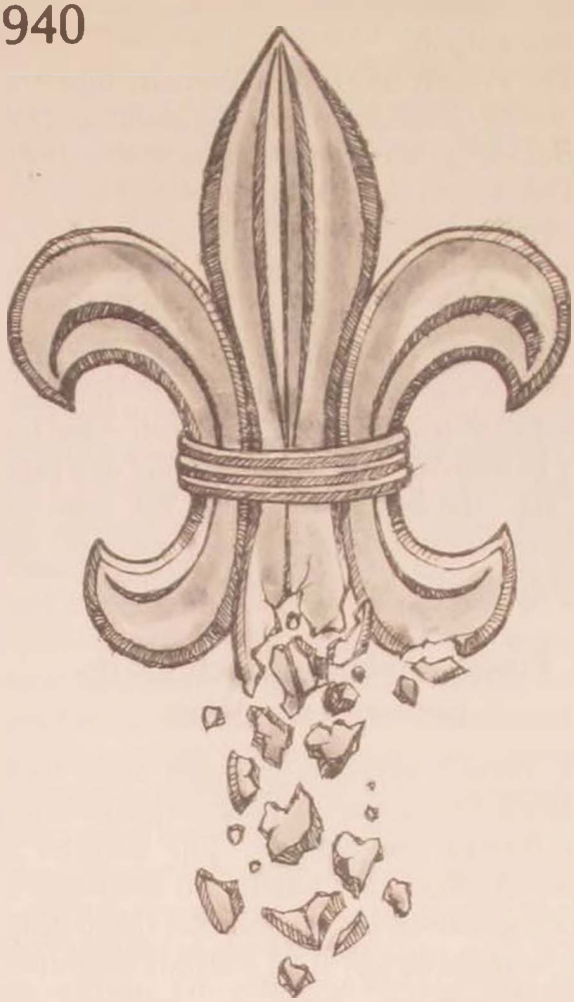
Andrews AFB, Maryland

military affairs abroad

THE FRENCH AIR FORCE IN 1940

Was It Defeated by the Luftwaffe or by Politics?

LIEUTENANT COLONEL
FARIS R. KIRKLAND, USA (RET)



DURING the Battle of France in May-June 1940, French Army commanders complained that German aircraft attacked their troops without interference by the French Air Force. French generals and statesmen begged the British to send more Royal Air Force (RAF) fighter squadrons to France. Reporters on the scene confirmed the German domination of the skies, and the overwhelming numerical superiority of the Luftwaffe came to be accepted as one of the principal causes of the French collapse.[1]

The air force was a convenient scapegoat for the French Army generals who dominated the Vichy regime that ruled France under the Germans. By attributing the defeat of French forces to weakness in the air, the army officers diverted attention from their own failures. Moreover, the Vichy leaders were able to strengthen their claim to legitimacy by blaming the parliamentary regime they had supplanted for failing to provide a sufficient number of aircraft. The Vichy leaders also reproached the British for holding the bulk of their air force in the British Isles. Concurrently, the Vichy army officers used the defeat of the air force to justify abolishing the air ministry and the air force general staff, incorporating their functions into the war ministry and army general staff and returning the air force to its former status as a branch of the army. With the army controlling the postwar sources of information, for many years there was no voice to challenge the official position that France had lost the war because the prewar politicians had not equipped the air force adequately.

Since the mid-1960s, fragments of information—aviator's memoirs, production reports, aircraft inventories, and Anglo-French correspondence—have come to light. These sources reveal four new facts about the French Air Force.

- The French aviation industry (with modest assistance—about 15 percent—from American and Dutch producers) had produced enough modern combat aircraft (4360) by May 1940 to defeat the Luftwaffe, which fielded a force of 3270.[2]

• The French planes were comparable in combat capability and performance to the German aircraft.

• The French had only about one-fourth of their modern combat aircraft in operational formations on the Western Front on 10 May 1940.[3]

• The Royal Air Force stationed a larger proportion (30 percent) of its fighter force in France than the French committed from their own resources (25 percent).[4]

These data exculpate the prewar parliamentary regime and the British. They raise questions about the the leadership of an air force that had parity in numbers of aircraft, the aid of a powerful ally, the latest radar, and the most advanced aviation technology in Europe, yet lost a defensive battle over its own territory.[5]

French Aviation Technology between the Wars

The French aviation industry built more warplanes during the interwar period than any of its foreign competitors. The Breguet 19 bomber of 1922 (1500 built) and the Potez 25 army cooperation aircraft of 1925 (3500 built) were the most widely used military aircraft in the world. (No more than 700 examples of any other type of military aircraft were built in any country during the interwar period.) One Breguet 19 flew across the Atlantic in 1927; a group of thirty Potez 25s circumnavigated Africa in 1933.[6]

French bombers were consistently and technically excellent. The Lioré et Olivier 20 of 1924 was the fastest medium bomber in the world for three years, and it gave birth to a half-dozen derivative designs. The Potez 542 of 1934 was the fastest bomber in Europe until 1936. In 1935, the Amiot 143, which equipped eighteen squadrons, carried a two-ton bomb load at 190 mph at 25,920 feet. Its German contemporary, the Dornier Do 23G, carried half the bomb load thirty miles per hour slower at 13,780 feet. During the following year, the Bloch 210, with a service ceiling of 32,480 feet, began to equip what would ultimately be twenty-four squadrons. No foreign bomber built before 1939 reached 30,000 feet.

The Farman 222 of 1936 was the first modern four-engine heavy bomber. Production models reached operational units at the same time that the service test examples (Y1B-17) of the Boeing Flying Fortress were delivered and two years ahead of the production version (B-17B). Typical performance envelopes—5510 pounds of bombs, 1240 miles, at 174 mph for the Farman, versus 2400 pounds of bombs, 1500 miles, at 238 mph for the Y1B-17—showed the designs to be technically comparable, with the French emphasizing loadcarrying and the Americans emphasizing speed. Design evolution of the two types tended to increase the speed of the Farman derivatives (to 239 mph for the model 223.4 of 1939) and the load-carrying capacity of the Boeing (to 4000 pounds of bombs, 1850 miles at 211 mph for the B-17G of 1943). Neither design was capable of long-range daylight bombing operations in its 1940 form. The Farman was used exclusively for night raids.

The Lioré et Olivier 451, at 307 mph, and the Amiot 354, at 298 mph, were the fastest medium bombers during the opening phases of World War II, outpacing the 1940 operational versions of the German *Schnellbomber* types—the Dornier Do 17K (255 mph), Heinkel He 111E (261 mph), and Junkers Ju 88A (292 mph). The Bloch 174 reconnaissance bomber of 1940 was, in operational configuration, the fastest multiengine aircraft in the world (329 mph).

French fighter aircraft held eleven out of the twenty-two world airspeed records set between the wars, and seven were held by one aircraft—the Nieuport-Delage 29 fighter of 1921. The Gourdou-Leseurre 32 monoplane fighter of 1924 was the world's fastest operational fighter until 1928, when the Nieuport-Delage 62 overtook it. In 1934, the Dewoitine 371 held the honor; and in 1936, the Dewoitine 510 was the first operational fighter to reach 250 mph. The Dewoitine 501 of 1935 was the first fighter to

mount a cannon that would fire through the propeller hub. The French fighters in action during 1939-40 were extremely maneuverable, powerfully armed, and able to outfight the Messerschmitt Bf 109E and Bf 110C, as well as the German bombers.

Only in the summer of 1938 did the air ministry begin awarding contracts of sufficient size to warrant the construction of facilities for mass production of aircraft and engines. Concurrently, the French government began a program of funding the expansion of production facilities in the United States to produce Curtiss fighters, Douglas light bombers, Martin light bombers, Pratt and Whitney engines, and Allison engines. By May 1940, French manufacturers were producing 619 combat aircraft per month, American firms were adding 170 per month against French orders, and the British were producing 392 fighters per month. German production of combat aircraft, averaging 622 per month during 1940, was little more than half that of the industries supporting the Allies.[8] The traditional explanation of the French defeat in terms of inadequate supplies of aircraft and aircraft that were inferior in quality does not stand up. The psychological and political milieu in which the air force evolved during the interwar years offers more substantive bases for understanding what happened to the French Air Force.

Interservice and Civil-Military Political Issues

The French Air Force was born, grew, and went into combat in an atmosphere of political intrigue. Air force officers were embroiled in three internecine struggles concurrently throughout the interwar period: animosity between the political left and the regular army that had begun before 1800; bureaucratic strife between army officers and aviators about the control of aviation resources, which began during the First World War; and a pattern of coercion and deceit between leaders of the air force and politicians—who, in the late 1920s, began to use the service for political ends.

At the core of French civil-military relations for the past two centuries had been fear on the part of the political left of repression by the regular army. The regular army had repressed leftist uprisings in bloody confrontations in 1789-90, 1848, and 1871. It had supported right-wing coups d'état in 1799 and 1851, and a possible coup by General Georges Boulanger had alarmed the politicians in 1889. One of the principal issues in the Dreyfus Affair of 1894-1906 was the claim by the army that the word of its officers was not subject to question by civilian authority. The politicians prevailed over the officers and seized every opportunity to weaken and humiliate them. The Combes and the Clemenceau governments in 1905-07 forced Catholic officers to supervise the seizure of church property, degraded them in the order of precedence, and appointed a Dreyfusard general as minister of war. A right-of-center government in 1910 used the regular army to crush striking railway workers, confirming the leftists' perceptions of the army as their enemy. In 1914, a central tenet of the Socialist program was replacement of the regular army with a popular militia. The left won the election of 1914 but could not enact its program because war began two months later. During the war, the generals assumed extraordinary power and robbed the left of its electoral victory. But in 1924, the left again won control of the government and moved swiftly against the regular army. A series of laws in 1927-28 reduced the army from a combat force to a training establishment, a 1931 law mandated laying off 20 percent of the regular officers, and two laws (1928 and 1933) amputated military aviation from the army and navy and set it up as a separate service. Though there were logical arguments favoring an independent air force, the move was primarily a demonstration of the politicians' power over the military leaders.

The aviators welcomed the politicians' support because they had been struggling with

officers of the ground arms since 1917 concerning the appropriate role for military aviation. The flyers saw aviation as most effective when employed in mass to strike at decisive points designated by the commander in chief, but each army general wanted a squadron under his direct orders. The aviators had achieved their objective, on paper, in the organization of the 1st Aviation Division in April 1918. The division was a powerful striking force of twenty-four fighter squadrons and fifteen bomber squadrons—585 combat aircraft. It could deploy rapidly to widely separated sectors and apply substantial combat power in support of the ground forces. However, the ground commanders in whose sector the 1st Aviation Division operated used the force primarily as a pool of extra fighter planes to protect their observation aircraft.[9]

The aviators' ability to influence the development and employment of their branch was limited by their junior status. The commanders of brigades, *escadres* (wings), and groups in the 1st Aviation Division were lieutenants or captains appointed as acting majors; and the divisional commander during the war was only a colonel. In the postwar army, major commands went to nonflying generals and colonels from the infantry, cavalry, or artillery. Having tasted senior command responsibility during the war with only eight to ten years of service, the leading aviators were impatient for promotion; but the structure of their branch under the army offered few positions for officers above the rank of captain (serving as commanders of squadrons, units comprising ten to twelve aircraft in peacetime).

The formation in 1928 of an air ministry independent of the ministry of war offered the aviators a separate promotion list, the opportunity to organize the air force as they saw fit, and an air force general staff to make policy. The aviators lost no time in reorganizing to create additional positions for field grade and general officers. Between 1926 and 1937, the number of squadrons rose from 124 to 134, while the number of *groupes* (commanded by majors) rose from 52 to 67. The fifteen aviation regiments, formations composed of several groups, were converted to thirty *escadres*, each having only two groups. The number of command positions for colonels was thereby doubled. The senior aviation commands—two air divisions in 1926—were changed to four air regions in 1932 and to two air corps and six air divisions in 1937. In addition, eight army aviation commands (headed by brigadier generals) and twenty-six corps aviation commands (headed by colonels or lieutenant colonels) would come into being upon mobilization. Having created an abundance of positions for senior officers, the air ministry accelerated the promotion process: In the army, the average time in service for fast-track officers to reach major was sixteen years; colonel, twenty-six years; and brigadier general, thirty years. In the air force after 1928, these averages fell to thirteen, nineteen, and twenty-two years.[10]

The question of aviation policy was not so easy to control. The army and the navy had fought the creation of the air ministry and the independent air force with sufficient vigor to retain operational control of 118 of the 134 combat squadrons. The air force officers were responsible for training, administering, and commanding the air force in time of peace; but in wartime, only sixteen squadrons of bombers would remain under the air force chain of command.

Many aviators saw the primary role of the air force as close support of the ground forces—observation, liaison, and attack of targets on the battlefield. The French had developed close support techniques during the First World War (1914-18) and had refined them during the war against the Rif rebellion in Morocco in 1925. In Morocco, aviators flying in support of mobile ground forces perfected the use of aviation for fire support, flank protection, pursuit of a beaten enemy, battlefield resupply, and aeromedical evacuation.[11] But many air force officers sought a broader mission for their service.

Aviators who were impatient with the close support mission—because it entailed the subordination of aviation to the army—gradually gained ascendancy on the air force general staff. In 1932, General Giulio Douhet's concepts of strategic aerial warfare were translated into French with a laudatory preface by Marshal Henri Pétain.[12] To placate the politically powerful army general staff, air force doctrine prescribed that the entire air force should be capable of participating in the land battle. But the aircraft the air staff sought to procure were the type Douhet had described as battleplanes—large, heavily armed machines designed to be capable of bombing, reconnaissance, and aerial combat. These were clearly intended for long-range bombing, not close support. The air staff claimed that such aircraft could support the land battle, but the army staff was skeptical. The army had sufficient influence to continue to dictate air force procurement policy until the beginning of 1936. In January of that year, the air force had 2162 first-line aircraft. Of these, 1368 (63 percent) were observation and reconnaissance planes dedicated to the army, and 437 (20 percent) were fighters dedicated to protecting the observation planes.[13]

In 1934-36, the tension between the army and the air force surfaced in a series of incidents. During a command post exercise in 1934, the army called for attack of battlefield targets; the air force protested that technical problems and limited resources made it impossible to meet the army's demands. The army appealed to the Supreme War Committee, which ruled that the air force should be responsive to the ground commanders and that there was no need for a supreme air commander. In 1935 during joint army-navy maneuvers, the army called for an air attack on motorized columns. The air force responded after a long delay with a strike by heavy twin-engined Bloch 200 battleplanes flying at treetop level. The umpires declared the aircraft to have been wiped out.[14] The air force had no aircraft suitable for the attack of battlefield targets, and the air staff on several occasions declined to consider proposals for dive bombers or assault aircraft on the grounds that the attack of battlefield targets was contrary to air force policy.[15]

The strategic bombing enthusiasts found their advocate in Pierre Cot, air minister from June 1936 until January 1938. Cot tripled the bomber force by organizing five new bomber *escadres*, converting seven of the twelve observation and reconnaissance *escadres* to bomber *escadres*, and equipping four of the five remaining reconnaissance *escadres* with aircraft capable of long-range bombing. The observation mission, except in the colonies, was turned over to the air force reserve so that the maximum number of regular air force units could participate in the strategic bombing mission.[16] (See Table I.)

Table I. Strength of the French Air Force by Branch and Year
(squadrons fully organized and equipped)

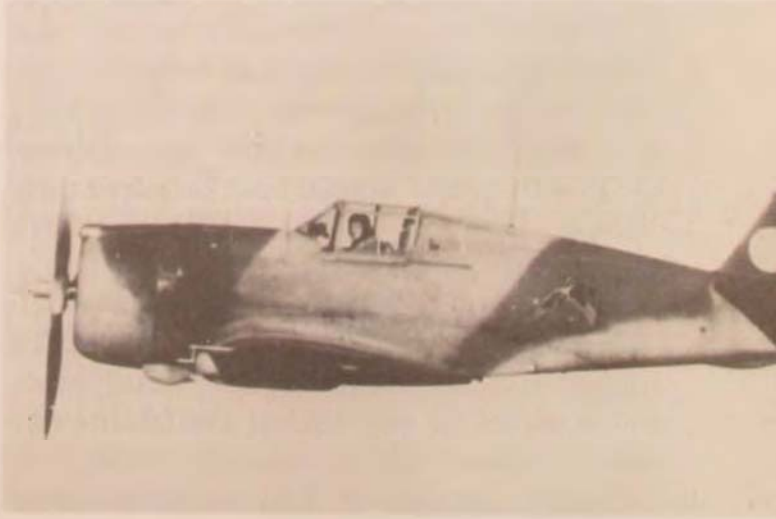
Branch	1920	1926	1932	1938	May 1940	
Fighter	83	32	37	42	67	
Bomber	32	32	27	66	66	
Observation and Reconnaissance	145	60	46	26*	30	(plus 47 Reserve)
Totals	260	124	110	134	163	(plus 47 Reserve)**

*Sixteen reconnaissance squadrons were equipped with battleplanes to participate in the long-range bombing mission.
**Of these, twenty-one fighter, forty-four bomber, six reconnaissance, and eleven reserve observation squadrons were fully organized but were reequipping in May 1940.

Fighters of the French Air Force, 1940

In May 1940, the French had an ample and excellent force of modern fighters. More than 1000 Morane-Saulnier 406s had been built when the German blitzkrieg struck. Though numerically the most important French fighter, the Morane performed less effectively than the Bloch 152 (below), which proved a better gun platform. In a dive, the Bloch fighter could overtake the vaunted Bf 109.

The agile Dewoitine 520 (left), classic in looks with performance to match, continued in production under the Vichy government. Luftwaffe training units flew it, as did German allies, Bulgaria, Romania, and Italy. . . . The Arsenal VG 33 (below), a fast and well-thought-out fighter, was not available in sufficient numbers to be effective in May 1940.



The American-built Curtiss Hawk 75 (right) began supplementing the French fighter force in 1939. These planes brought down 220 German aircraft with the loss of 33 French pilots. Against the Messerschmitt family of fine fighters, the Hawks achieved a score of twenty-seven Bf 109Es and six Bf 110s destroyed against three losses.

Cot's all-out support of strategic bombing met some opposition in the Superior Air Council—the seven or eight senior generals in the air force. To facilitate acceptance of his program, Cot convinced the parliament to pass a law reducing the mandatory retirement age limits for each grade by five years. This move forced all of the members of the Superior Air Council into retirement and removed 40 percent of the other officers as well. Cot filled the vacancies by promoting NCOs and calling reserve officers to active duty—men he believed were more amenable to his new programs of political indoctrination.[17] His purges and the sudden promotion of strategic bombing enthusiasts generated a crisis of morale in the officer corps. The crisis was exacerbated rather than alleviated when Guy La Chambre replaced Cot in 1938, because the new air minister conducted his own purge—of the men whom Cot had promoted. La Chambre denounced strategic bombing and directed the air force to prepare to provide close support to the army.[18] Following these developments, the air force leaders perceived the government as an adversary, as well as the army. They began a practice of ignoring governmental policies and deceiving the air minister and the parliament while pursuing narrowly institutional interests.

The struggle for independence occupied the energies and attention of the air staff so completely that they neglected to develop fully the ground observer corps; command, control, and communications systems; and airfield facilities.[19] Because they were preparing to wage a defensive aerial battle over their own territory, the French aviators could have prepared these elements in peacetime, but they were still in a rudimentary state in 1940. During the battle, the French had difficulty tracking and intercepting intruders, were unable to mass units and consequently suffered unduly heavy losses, and achieved an operational availability rate only one-fourth that of Luftwaffe units.

Possibly because of their disenchantment with the government for using their service as a political toy, the aviators were unable or unwilling to believe that they might be provided with more than a handful of additional aircraft. Thus, when the director of aircraft production advised General Vuillemin, the chief of the air force, in January 1939 that 370 to 600 aircraft per month would come from French factories in 1940, the general said the air force required only 40 to 60. There were not enough aircrews or ground crews for a larger number, and to expand the training program would require the efforts of the entire strength of the air force. In March, Vuillemin agreed to accept 330 aircraft per month. However, even by using forty- to forty-five-year-old reservists to fly in first-line combat units, he could not fully man his units after mobilization.[20] The availability of aircrews became the limiting factor on the number of units that Vuillemin could field, and the physical capacities of his aging pilots became the limiting factor on how frequently the aircraft would fly.

To keep from being buried under the flood of aircraft pouring from the factories, the air staff imposed multiple requirements for modifications, conducted complex acceptance inspections, and kept key components (guns, propellers, and radios) separated from the aircraft on which they were to be installed. Aircraft newly arrived from America were left in their crates. Still the air force received many more aircraft than it could man, and the air staff had to conceal the surfeit from prying parliamentary eyes by dispersing brand-new, combat-ready planes to remote airfields far from the battle zone.[21]

As a consequence of the political struggles between the officer corps and the political left, between the army and the air force, and between the air force and the government, the French Air Force entered combat with an incomplete ground infrastructure, insufficient personnel to man its aircraft, and a doctrine so completely at variance with the army's doctrine that the two services were destined to fight largely independent wars.

The Battle of France: 10 May-25 June 1940

The French faced the German invasion with 4360 modern combat aircraft and with 790 new machines arriving from French and American factories each month. However, the air force was not organized for battle. The regular air force had only half again as many units as during its peacetime nadir in 1932. As the battle opened, 119 of 210 squadrons were ready for action on the decisive northeastern front. The others were reequipping or stationed in the colonies. The 119 squadrons could bring into action only one-fourth of the aircraft available. These circumstances put the Allied air forces in a position of severe numerical inferiority vis-à-vis the Luftwaffe. (See Table II.) Qualitatively, however, the French pilots and aircraft proved to be more effective than their adversaries.

The fighter units on the northeastern front were equipped exclusively with machines built within the preceding eighteen months. The American-made Curtiss 75A fighter joined French squadrons beginning in March 1939. It was the most effective type in its class in combat over France until the Dewoitine D520 became operational in mid-May 1940. Eight squadrons equipped with the Curtiss 75A shot down 220 German aircraft (confirmed kills), losing only thirty-three pilots. In seven aerial battles in which the Curtiss fighters were engaged with Messerschmitts, the total score was twenty-seven Bf 109Es and six Bf 110Cs destroyed for three of the French aircraft.[23]

The Morane-Saulnier MS 406 equipped eighteen squadrons in France on 10 May 1940. The kill-loss ratio for units flying the MS 406 was 191 to 89. The shortcomings of the Morane fighter compared to the Bf 109E have been the topic of many memoirs, but in the reported battles in which Messerschmitts faced Moranes alone, the French posted a record of thirty-one kills and five losses. Both the Morane and the Messerschmitt were designed to met specifications issued in 1934, prototypes flew in 1935, and quantity production began in 1938. The Messerschmitt design was better suited for evolutionary development, and the Bf 109E-3 model of December 1939 was superior to the Morane. (See Table III.) During the Battle of France, the air staff converted twelve squadrons equipped with Moranes to other types as rapidly as training facilities permitted. This policy marginally increased the efficiency of the individual units, but it acted to decrease the effectiveness of the fighter force as a whole by taking combat-experienced squadrons out of the line at a critical time. Further, it failed to capitalize on new production to increase the size of the fighter force.

Another fighter designed to meet the same specification as the MS 406 was the Bloch MB 150. Though it lost out in the procurement competition to the Morane, the Bloch firm developed the basic design around a more powerful engine. The resulting Bloch MB 152 was faster and more powerfully armed than the MS 406. Twelve squadrons had Bloch fighters on 10 May 1940, and six more became operational

Table II. Modern Combat Aircraft Deployed on the Western Front, 10 May 1940[22]

Type	French	British, Belgian, and Dutch	Allies Combined	German
Fighters	583	197	780	1264
Bombers	84	192	276	1504
Reconnaissance and Observation	458	96	554	502
Totals	1125	485	1610	3270

with them during the battle. Units while equipped with Blochs shot down 156 German planes and lost 59 pilots.[24]

The first two squadrons equipped with the fast and agile Dewoitine 520 entered the battle on 13 May; eight others completed conversion training and became operational before the armistice. Between them, they shot down 175 enemy aircraft for a loss of 44 aviators. Polish pilots manned two squadrons of Caudron C 714 fighters. The ultralight Caudron (3086 pounds, empty) was capable of 302 mph with a 450-horsepower engine. Becoming operational on 2 June, the Poles shot down seventeen German aircraft and lost five pilots before their unit was disbanded on 17 June.

The French fighter force had available to it during the battle more than 2900 modern aircraft. At no time did it have more than one-fifth of these deployed against the Germans. The operational rate of the fighter force was 0.9 sorties per aircraft per day at the height of the battle. (German fighter units flew up to four sorties per aircraft per day.) Yet in spite of committing only a minor portion of its resources at a low usage rate, the fighter force accounted for between 600 and 1000 of the 1439 German aircraft destroyed during the battle.

The bulk of the published commentary on the French bomber force has focused on the fact that eight squadrons of Amiot 143M twin-engine medium bombers remained in the French order of battle. Designed in 1931 and manufactured between 1935 and 1937, the Amiot 143M by 1940 had been left behind by the rapid evolution of aviation technology. Critics of the prewar regime and apologists for the air force have drawn attention to this aircraft to highlight the poor quality of the equipment with which the French Air Force had to fight. Operationally, units equipped with the Amiot 143 performed with distinction. The eight squadrons flew 551 night bombing sorties between 10 May and 16 June and lost only twelve aircraft. In addition, six of the squadrons furnished thirteen aircraft for one desperate daylight mission on 14 June against German bridges and vehicular traffic approaching Sedan. A strong fighter escort kept the loss to three Amiots.[26]

The French long-range, four-engine heavy bomber, the Farman 222, equipped four squadrons. These squadrons flew seventy-one night bombing missions, striking targets such as Munich, Cologne, and Koblenz. They lost only two aircraft.

Modern French day bombers included the 307-mph Lioré et Olivier LeO 451 (18 squadrons, 392 sorties, 98 losses), the 298-mph Amiot 354 (4 squadrons partially equipped, 48 losses), and the 304-mph Breguet 693 (10 squadrons, 484 sorties, 47 losses). The French machines were supplemented by shipments from America of the 288-mph Martin 167F (first of 8 squadrons into action 22 May, 385 sorties, 15 losses) and

Table III. Comparative Characteristics of Fighter Aircraft in the Battle of France[25]

Country	Type	Horse-power	Speed (mph) at Best Altitude (ft)	Service Ceiling (ft)	Armament
France	Curtiss 75A-3	1200	311 at 10,000	33,700	six 7.5-mm
France	Dewoitine 520	910	329 at 19,685	36,090	one 20-mm four 7.5-mm
France	Morane 406	860	302 at 16,400	30,840	one 20-mm two 7.5-mm
France	Bloch 152	1100	320 at 13,120	32,800	two 20-mm two 7.5-mm
England	Hawker Hurricane I	1030	324 at 16,250	34,200	eight 7.7-mm
Germany	Messerschmitt Bf 109E-3	1175	348 at 14,560	34,450	two 20-mm two 7.9-mm

the 305-mph Douglas DB-7F (first of 6 squadrons into action 31 May, 69 sorties, 9 losses).

The effectiveness of the French bomber force was reduced by poor communications arrangements that made massing of bomber squadrons impossible and rendezvous with fighter escort problematic. Attacking piecemeal, the two day-bomber wings operational on 10 May lost twenty-eight of their forty-two aircraft in the first week. RAF day-bomber units, operating in the same command/control/communications environment, lost 132 out of 192. Most of the surviving machines were in need of extensive repairs. Although new aircraft and units came into action, the low operational rate (.25 sorties per aircraft per day) of the bomber force degraded its ability to have a significant effect on the land battle.

French reconnaissance and observation units had the most powerful aircraft in these two categories in the world. The standard French strategic reconnaissance aircraft, the Bloch 174, was capable of 329 miles per hour and an altitude of 36,000 feet. First delivered to units in March 1940, the Bloch 174 was produced quickly enough to equip all of the strategic reconnaissance squadrons during the battle. The reconnaissance units obtained early, accurate, and detailed information on German concentrations and axes of advance. They continued to keep senior army headquarters informed, irrespective of weather and enemy opposition, throughout the battle. However, the tempo of activity in reconnaissance units was extraordinarily low—an average of one mission every three days for a squadron (.04 sorties per aircraft per day). At the peak of intensity—from 10 to 15 May—the most active squadron flew two missions per day.[27]

The observation branch, relegated to reserve status in 1936, was the stepchild of the air force. The air staff had no program to modernize its equipment—aircraft dating from 1925 to 1935. Guy La Chambre in June 1938 directed the air staff to reequip the observation squadrons. Pilots in operational units wanted an ultrafast singleseater for long-range reconnaissance and a light two-seater capable of landing on unimproved fields for short-range observation missions. The air staff, preoccupied with political issues and indifferent to the views of men on squadron duty, ordered the Potez 63.11, the fastest, heaviest, most complex observation plane in the world. With a top speed of 264 miles per hour, it was 40 miles per hour faster than its German counterpart (Henschel Hs 126 B) and 50 miles per hour faster than the British Lysander. With twelve machine guns, it was the most heavily armed machine in any air force. Too fast and heavy to land on improvised strips yet too slow to escape German fighters, it was an elegant and graceful coffin for its crews.

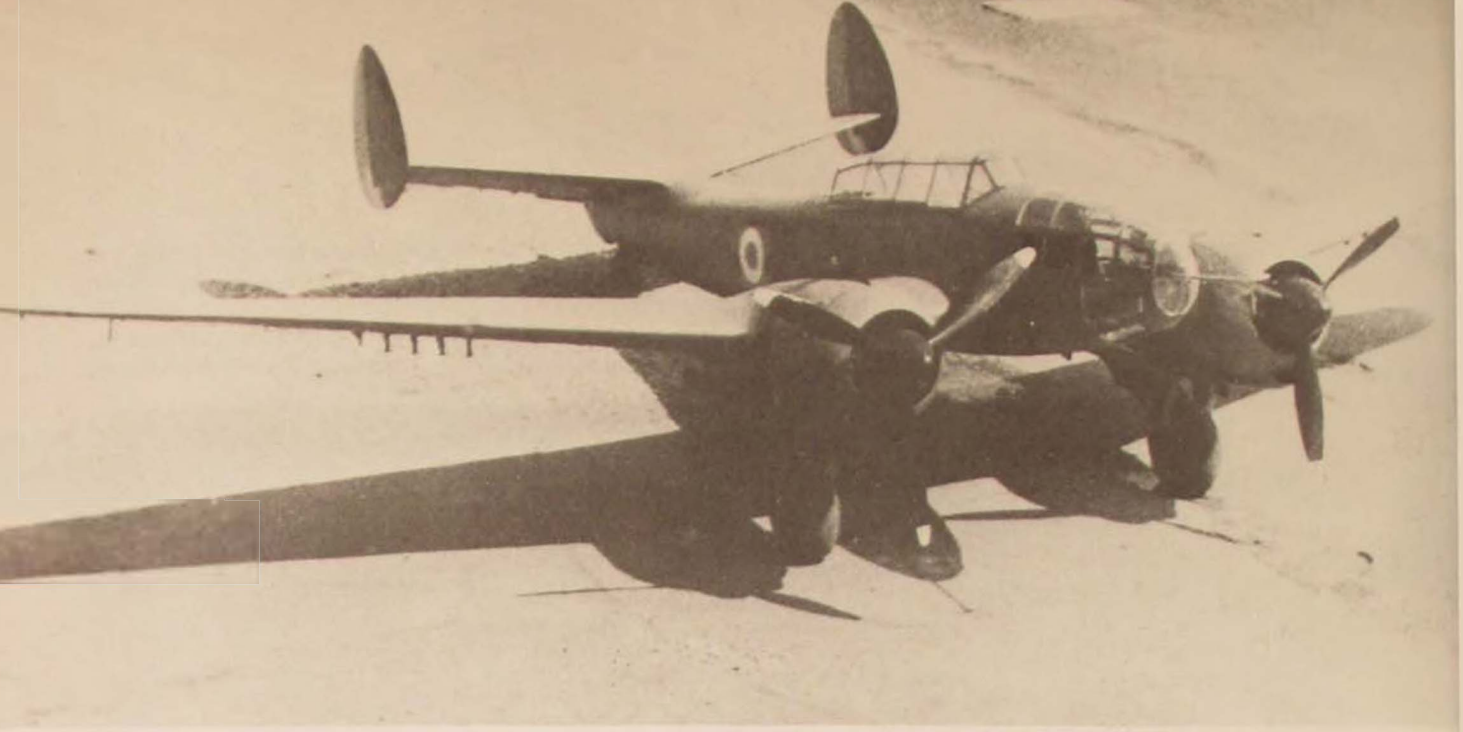
Observation squadrons trained and mobilized under the army commands they would support. Army corps commanders viewed their observation squadrons as their private air forces and often imposed unrealistic demands that led to heavy losses early in the war. The air force general staff made rules to protect observtion aircraft that limited their utility—for example, they had to fly behind friendly artillery, no mission could exceed fifteen minutes, fighter escort was required, and only the most modern (Potez 63.11) aircraft could be used. Poor liaison between the army and air force, coupled with slow communications within the air force, led to many observation squadrons being kept on forward airfields until they were about to be overrun by German motorized units. As a result, more than half of the observation aircraft in units on 10 May were destroyed to prevent capture or simply abandoned by the end of the first week. When the front stabilized between 25 May and 5 June, the observation units performed effectively, but coordination between the air force and army was too threadbare to permit them to function in a war of movement.[28]

The ability of the air force to provide close combat support to the army had been fatally compromised by the aviators' struggle for independence. Senior army officers were ignorant of the capabilities and limitations of avia-

Bombers of the French Air Force, 1940

Far more impressive in numbers and capability of aircraft than its German counterpart, the French bomber force was crippled by poor operational doctrine. The Farman 222 (above), a four-engine heavy bomber, struck at Munich, Cologne, and Koblenz in night raids. American-built Martin 167F twin-engine bombers (right) bolstered the French bomber force, as did Douglas DB-7s (below), which were designed specifically for the French Air Force. DB-7s produced after June 1940 were diverted to England and, later, the Soviet Union, where they served as night fighters and light bombers.

Together with the Breguet 693, the Lioré et Olivier 451 and the Amiot 354 (shown below) rounded out what was essentially a modern and well-equipped bomber force. These light, fast day-bombers joined the rest of the force in uncoordinated and piecemeal efforts against a numerically and somewhat technically inferior Luftwaffe. The outcome—due to inept leadership at the highest levels, poor communications, and defective strategy—was a heavy loss of bombers that yielded little assistance for French land forces.



Reconnaisance and Observation Aircraft of the French Air Force, 1940

The standard French strategic reconnaissance aircraft, the Bloch 174 (above), and the high-performance, heavily armed Potez 63.11 (facing page) should have proved ever helpful to the French. However, the observation branch of the French Air Force had to fight for respectability with the more prestigious fighter and bomber branches, while coordination between the air force and the army was poor. Underutilized, unwisely based, and constrained by air staff rules that ignored operational realities, the reconnaissance and observation force suffered major losses and achieved less-than-optimum results.

tion, and the air force had done almost nothing to develop a capability to attack battlefield targets. Army generals declined strikes on appropriate targets. They demanded support without being able to describe the nature or location of the target or the plan and timing of the friendly maneuver to be supported. The air force organized maximum efforts to support French armored counterattacks. On 14 May, British and French bombers flew 138 sorties and lost 51 planes in support of General Charles Huntziger's counterattack at Sedan. He postponed the attack. The next day the air force mounted 175 sorties; the attack was canceled. The air force did its best to support Colonel Charles de Gaulle's armored thrusts toward Montcornet on 16 and 17 May. Night fighters received day ground assault missions, and the remains of the bomber units were committed. But Colonel de Gaulle failed to tell the air force the time and direction of his movements. As a result, 68 bomber sorties went in before de Gaulle moved and were of no assistance to him. A major breakout south by the encircled Army Group 1 was planned for 21 May. The air force received orders to support the attack but had no information on the time, place, or direction.[29] (The mission was canceled.)

The air force general staff, dedicated to the strategic bombing mission, had quietly ignored Guy La Chambre's directive to prepare for the ground assault mission. La Chambre had forced the air staff to procure assault bombers in 1938, and the first aircraft arrived in units in October 1939. The instructional manual for assault bomber units did not appear until January 1940, and there never was a manual for the employment of fighters in the assault role. The air staff complied with the letter of ministerial and army demands for a ground

assault capability but did not commit intellectual, developmental, or training resources to developing one.

With German armor overrunning France, the air force belatedly sought to improvise an antitank capability. More than 2300 of the 2900 French fighter planes and all of the 382 assault bombers available during the battle carried 20-mm cannon capable of penetrating the topside armor of all of the German tanks. The air staff designated Fighter Group III/2 to carry out the first aerial antitank missions. Its MS 406 aircraft carried high-velocity, engine-mounted 20-mm guns, but no armor-piercing ammunition was available. On 23 and 24 May, the unit flew nine sorties, lost three aircraft, and destroyed no tanks. Two weeks later, several fighter units flew a total of forty-eight antitank sorties over a four-day period—again without armor-piercing shells. They lost ten aircraft and did inconsequential damage. Two attacks in mid-June cost an additional three aircraft without seriously damaging any tanks.[30] The capability of the armament and the valor of the pilots were wasted because of the absence of intellectual and logistical preparation.

The story of the French Air Force is one of gallant and competent individual performances that made no perceptible difference in the outcome of the battle. A dozen years of political strife had unraveled the network of trust and confidence through which bravery and professional skill could have an effect. The army and the air force each fought its own battle, weakened by the lack of coordination. The air staff, with its eyes on Berlin, neglected the preparation of command/control/communications systems and thereby denied the French Air Force the ability to integrate the efforts of individual units. The air force was so bitterly alienated

from the political leadership that it declined to expand its organization and thereby deprived France of the powerful air force that its industrial base had provided.

Could the French Air Force Have Seized Command of the Air?

On 10 May 1940, the operational units of the French Air Force committed to the Western Front were heavily outnumbered. The low rate of operations in the French Air Force compared to that of the Germans increased by a factor of four the French inferiority in the air during the first month of the battle. By mid-June, however, the Luftwaffe was exhausted. It had lost 40 percent of its aircraft. Its flyers had been operating above hostile territory without navigational aids and with the certainty of capture in the event their aircraft were disabled. The air and ground crews were working from captured fields at the end of lengthening supply lines. The French, on the other hand, had conducted much less intensive flight operations, were able to recover the crews of disabled aircraft, were falling back on their logistical bases, and were bringing new units on line with brand new aircraft every day. By 15 June, the French and German air forces were at approximate parity with about 2400 aircraft each, but the French were operating from their own turf, and they had the support of the RAF. Mastery of the air was there for the seizing, but on 17 June the French air staff began to order its units to fly to North Africa. The justification put forth by the air staff was that the army was destroyed and could not protect the airfields.

An examination of which units were ordered to North Africa and which were left behind reveals much about the motivation behind the evacuation. The units flown to North Africa were those regular air force squadrons with the most modern and effective aircraft—all of the squadrons equipped with the Curtiss 75A (10), Dewoitine 520 (10), Amiot 354 (8), Bloch 174 (18), Farman 222 (4), Douglas DB-7 (8), and Martin 167 (10), plus most of those with the Lioré et Olivier 451 (12 of 18). Those left behind included all of the air force reserve units—47 observation squadrons and 12 fighter squadrons—and all of the units closely connected with the army (the observation squadrons, the 10 assault bomber squadrons, and 7 night fighter squadrons converted to the ground assault role).[31]

The behavior of the leaders of the French Air Force before and during the Battle of France suggests that their primary purposes were to protect the regular air force against its domestic adversaries and to ensure its survival after the battle and the expected defeat. Refusing to expand the regular air force, spinning off the dangerous and unglamorous observation mission to the reserves, maintaining a low operational rate, declining to seize command of the air when the Luftwaffe was weak, and selecting only regular air force units and those unconnected with direct support of the army to send to North Africa constitute a coherent pattern. The senior aviators kept their service small, protected the cadres from severe danger, and kept most of the regular air force together out of the Germans' reach. Such decisions suggest a preposterous misordering of priorities in a nation at war but do make psychological and institutional sense when one reflects on both the frustration the aviators had suffered in their struggle to achieve operational independence from the army and the cavalier and callous way in which parliamentary officials had played with their lives, careers, and values.

The relevance of the French experience for leaders of the United States Air Force lies in the fact that the institutional struggle for autonomy and the operational necessity for cooperation are permanent and uncongenial elements of every defense establishment. The U.S. Army Air Service (and Air Corps) endured as much destructive and capricious treatment by uniformed and civilian officials of the army and the navy during the interwar years as did the French Air Force.[32] By facing the issue of insti-

tutional independence for aviation just after (rather than just before) a great war, American military leaders avoided an interservice confrontation on the battlefield. But the interservice struggle goes on: doctrinal divergence retains its potential to sabotage mutual support among the services in future wars. The French experience can be useful as a cautionary tale about the ease with which institutional loyalties can weaken a national defensive posture.

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Notes

1. For a survey of French efforts to obtain more air support, see Patrick Fridenson and Jean Lecuir, *La France et la Grande Bretagne face aux problèmes aériens* (Vincennes: Service Historique de l'Armée, 1976). A sampling of army generals who complained about air support includes Lieutenant General René Prioux (*Souvenirs de guerre 1939-1943*. Paris: Flammarion, 1947); Lieutenant General Henri Aymes (*Gembloux: succès français*. Paris: Berger-Levrault, 1948); Lieutenant General Benoit Fornel de la Laurencie (*Les opérations du III^e^ Corps d'Armée en 1939-40*. Paris: Charles Lavauzelle, 1948); and General Alphonse Georges in preface to General Gaston Roton's *Années cruciales* (Paris: Charles Lavauzelle, 1947). Historians who accepted French aerial inferiority as a given include Alistair Horne (*To Lose a Battle: France 1940*. Boston: Little, Brown, 1969, pp. 184-85); Guy Chapman (*Why France Fell: The Defeat of the French Army in 1940*. New York: Holt, Rinehart, and Winston, 1968, pp. 33-34, 69-72); William L. Shirer (*The Collapse of the Third Republic*. New York: Simon and Schuster, 1969, pp. 611, 616-20); and Jeffrey A. Gunsburg (*Divided and Conquered*. Westport, Connecticut: Greenwood, 1969, pp. 107-10).

2. Joseph Roos, "La bataille de la production aérienne," *Icare*, 59 (Autumn-Winter 1971), pp. 44-51; Jean Truelle, "La production aéronautique militaire jusqu'en 1940," *Revue d'Histoire de la Deuxième Guerre Mondiale*, 73 (January-March 1969), p. 103; Pierre Cot, "En 40, ou étaient nos avions?" *Icare*, 57 (Spring-Summer 1971), pp. 36-57; Hans-Adolf Jacobsen, *Entscheidungsschlachten des Zweiten Weltkrieges* (Frankfurt-am-Main: Verlag fur Wehrwesen Bernard und Graefe, 1960), p. 25.

3. For details and sources on combat performance and numbers of French Air Force units, see the discussion in this article on the Battle of France.

4. The Royal Air Force sent 12 of its 40 operational fighter squadrons to France—30 percent. The French committed 580 of their 2200 fighters—26 percent. RAF fighter losses were 227 of those based in France plus 219 from Fighter Command units based in England. Total—446. French fighter losses totaled 508. Total losses of aircraft in the Battle of France were: French—892, British—1029, German—1469. These figures were derived from data and discussion in Major L. F. Ellis, *The War in France and Flanders* (London: Her Majesty's Stationery Office, 1953), pp. 98, 309, 312, 372-73; Robert Jackson, *Air War over France* (London: Ian Allen, 1974), pp. 76-78, 136-37; Fridenson and Lecuir, pp. 184-85, 189, 198; Chapman, pp. 160-61, 225, 290; Gunsburg, pp. 111-12, 268; Shirer, pp. 700, 766, 767, 783; General Maurice Gamelin, *Servir* (Paris: Plon, 1946), vol. 1, p. 282; William Green, *Warplanes of the Second World War*, vol. 2, *Fighters* (Garden City, New York: Doubleday, 1961), p. 61.

5. The French had developed radar on their own; the British provided the French Air Force with superior radar equipment in early 1940. Gunsburg, p. 107; Fridenson and Lecuir, pp. 167-70.

6. Breguet 19 ocean flight—Heiner Emde, *Conquerors of the Air* (New York: Viking, 1968), p. 79; Potez 25 African flight—André Van Haute, *Pictorial History of the French Air Force* (London: Ian Allen, 1974), pp. 97-103; production of Breguet 19 and Potez 25—Elke C. Weal et al., *Combat Aircraft of World War Two* (New York: Macmillan, 1977), pp. 88, 97.

7. Performance data on interwar aircraft from Weal et al.; C. G. Grey and L. Bridgman, *Jane's All the World's Aircraft* (London: Sampson Low Marston, 1919-1939); Martin C. Windrow and Charles W. Cain, editors, *Aircraft in Profile*, 14 vols. (New York: Doubleday, 1967-1971); Kenneth Munson, *Fighters between the Wars 1919-1939* (New York: Macmillan, 1970); and *Bombers between the Wars 1919-1939* (New York: Macmillan, 1970); William Green, *The Warplanes of the Third Reich* (Garden City, New York: Doubleday, 1970); and James C. Fahey, *U.S. Army Aircraft* (New York: Ships and Aircraft, 1946). Data on 1939-40 aircraft from same sources and also from William Green, *Warplanes of the Second World War*, vols. 1-11, and *Famous Bombers*, vols. 1 and 2 (Garden City, New York: Doubleday, 1959-60). Speed records from Christopher Chant et al., *The Encyclopedia of Air Warfare* (New York: Crowell, 1975), p. 54.

8. German production—William Green, *Warplanes of the Third Reich*, pp. 296, 387, 433, 455, 543, 578; French production—William Green, *Warplanes of the Second World War*, vol. 1, pp. 21-22, 29-30, 32, 46; vol. 7, pp. 88, 110, 113, 117, 140, 142-44; vol. 8, pp. 12, 13, 32; John McVickar Haight, Jr., *American Aid to France, 1938-1940* (New York: Atheneum, 1970), pp. 139-40 (aircraft built in the United States); and British production—Derek Wood and Derek Dempster, *The Narrow Margin* (New York: Paperback Library, 1969), p. 453.

9. Van Haute, pp. 60-64; General André-Paul-Auguste Voisin, "La doctrine de l'aviation française de combat en 1918." *Revue des Forces Aériennes*, 3 (1931), pp. 885-90, 898-910, 1299-301.

10. *Jane's All the World's Aircraft*, 1927, p. 57a; van Haute, pp. 66-70, 81-83, 89-92; Lieutenant General Jean Henri Jauneaud, *De Verdun à Dien Bien Phu* (Paris: Editions du Scorpion, 1960), pp. 38-39; France, Ministère de la guerre, *Annuaire officiel de l'armée française* (Paris: Charles Lavauzelle, 1922, 1925, 1928, 1932, 1936).

11. Colonel Paul Armengaud, "Les enseignements de la guerre Marocaine (1925-1926) en matiere d'aviation," *Revue Militaire Francaise*, 28 (January-March 1927), pp. 150-71, 340-56; 28 (April-June 1928), pp. 73-94, 151-64; editors of *Revue des Forces Aériennes*, "Ait Yacoub—le role de l'aviation dans les affaires de Guelifat, Tarda, et Ait Yacoub en Maroc," *Revue des Forces Aériennes*, 1 (August-December 1929), pp. 295-308.

12. General Giulio Douhet, *La guerre de l'air*, translated by J. Romeyer (Paris: Journal "Les Ailes," 1932).

13. Van Haute, p. 108.

14. Brigadier General Jean Hébrard, *Vingt-cinq années d'aviation militaire (1920-1945)*, 2 vols. (Paris: Editions Albin Michel, 1946), pp. 162-67, 170-75.

15. Brigadier General Fleury Seive, *L'aviation d'assaut dans la bataille de 1940* (Paris: Editions Berger-Levrault, 1948), pp. 21, 50, 53-55; Hébrard, pp. 179.

16. Pierre Cot, "The Defeat of the French Air Force," *Foreign Affairs*, 19 (October 1940-July 1941), pp. 790, 805; Jauneaud, pp. 46-47; Hébrard, p. 185; Robert W. Krauskopf, "French Air Power Policy 1919-1939" (unpublished Ph.D. dissertation, Georgetown University, 1965), pp. 98-99, 122, 223-26; Robert J. Young, "The

Strategic Dream: French Air Doctrine in the Inter-War Period, 1919-39," *Journal of Contemporary History*, 9 (October 1974), pp. 67-69.

17. Major General Paul Armengaud, *Batailles politiques et militaires sur l'Europe. Témoignages* (Paris: Editions du Myrte, 1948), pp. 37-40.

18. Krauskopf, pp. 254-56, 263; Young, pp. 72-73.

19. General Henri Hugo, "Une expérience inestimable," *Icare*, 54 (Summer 1970), pp. 92-93; General Joel Pape, "Parfois, j'ai envie d'oublier," *Icare*, 54 (Summer 1970), pp. 100-01; General Raymond Brohon, "Le groupement de bombardement No. 10," *Icare*, 57 (Spring-Summer 1971), p. 87; Lieutenant Colonel René Josselin, "Sept semaines sur la front de la Sarre," *Icare*, 59 (Fall-Winter 1971), pp. 163-64.

20. Lieutenant General Francois-Pierre-Raoul d'Astier de la Vigerie, *Le ciel n'était pas vide* (Paris: René Julliard, 1952), pp. 48, 53-54; Major Jean Fraissinet, "De la drôle de guerre à la vraie," *Icare*, 56 (Winter 1970), p. 123n; Pierre Jean Gisclon, "Maurice Arnoux est mort au combat," *Icare*, 54 (Summer 1970), p. 135; Pape, p. 99; Lieutenant Colonel Henri Dietrich, "Point de view d'un réserviste," *Icare*, 54 (Summer 1970), p. 118; Colonel Jacques Ballet, "A l'abordage sur Potez 63," *Icare*, 59 (Fall-Winter 1971), p. 118; Colonel Henri Moguez, "Histoire du groupe 501," *Icare*, 59 (Fall-Winter 1971), pp. 138-40; Major Jean Ridray, "Comme à la fête," *Icare*, 54 (Summer 1970), p. 128; Jacques Lecarme, "Triste campagne de France," *Icare*, 57 (Winter 1970), pp. 149-50; Roos, pp. 46-49; Gunsburg, p. 74.

21. Cot, pp. 799-800; Shirer, p. 618; Colonel Jean Louveau, "Jusqu' à l'abordage," *Icare*, 54 (Summer 1970), p. 110. Colonel Louveau in September 1939 saw 150 new fighters sitting at Chateauroux, and when he went to pick up replacement aircraft in May he was offered one without guns and one without sights. Colonel Dietrich of Fighter Group II 10 had a similar experience at Cazeaux—the missing parts were radios and firing pins (Dietrich, p. 122); General Paul Stehlin, "De la diplomatie au renseignements et à l'escadrille," *Icare*, 55 (Fall-Winter 1970), p. 46; Pape, p. 105; Frank Fremond, "Le dernier vol du Colonel Dagnaux," *Icare*, 57 (Spring-Summer 1971), p. 136; Roos, pp. 46-49, 52; Haight, pp. 242-43.

22. The best sources on numbers of aircraft available on 10 May 1940 are the technical works by Green, Cain and Windrow, and Haight (see footnotes 7 and 8).

23. "Effectifs, pertes, palmares des 24 groupes à 2 escadrilles et des 4 escadrilles de chasse de nuit dans la Bataille de France," *Icare*, 54 (Summer 1970), p. 72; Martin C. Windrow and Charles W. Cain, *Aircraft in Profile*, vol. 6, profile 135, p. 16; vol. 7, p. 24; vol. 9, p. 235; Lieutenant Colonel Salesse, *L'aviation de chasse française en 1939-1940* (Paris: Berger-Levrault, 1948), pp. 36, 40, 48, 54, 57, 61, 72, 83, 85, 175.

24. Salesse, pp. 72, 83, 85, 91, 94, 97, 102, 106, 110-11, 113-16, 118, 120, 130, 132-34, 136, 143, 145-46, 149, 151, 154, 158-59.

25. Green, *Warplanes of the Second World War*, vol. 1, pp. 30, 40, 49, 57; vol. 2, p. 62; vol. 4, p. 44; Green, *Warplanes of the Third Reich*, p. 549.

26. For performance, see entries for particular aircraft in Weal et al., Windrow and Cain, and Green, *Warplanes of the Second World War*. For operational rate, see Jackson, pp. 60-70, and Colonel Pierre Paquier, *L'aviation de bombardement française* (Paris: Berger-Levrault, 1948), pp. 208-49.

27. Lieutenant R. P. Guy Bougerol, *Ceux qu'on n'a jamais vus...* (Paris: B. Arthaud, 1943), and Lieutenant Colonel Pierre Paquier and Major Cretin, *L'aviation de renseignement française en 1939-1940* (Paris: Berger-Levrault, 1947), pp. 88-89, 92-93, 97, 99, 102, 106, 114, 116.

28. Paquier and Cretin, pp. 48, 57, 62-64, 67, 75.

29. Astier, p. 72 (General Corap says army is "betrayed" by the air force), p. 104 (General Huntziger declines bombing on massed German tank), p. 105 (General Bilotte declines bombing of crossing at Houx; General Corap asks for air strike but can't say where), pp. 110-14 (all-out effort to support Huntziger's counterattack, subsequently postponed), p. 127 (General Corap calls for air strikes but cannot specify targets), p. 167 (Colonel de Gaulle declines to give air force his plan of maneuver), p. 238 (General Altmayer refuses air support for attack on Abbeville). Also, Salesse, p. 109 (de Gaulle calls for help too late); Paquier, pp. 200-01.

30. Astier, pp. 136, 150-51, 181; Salesse, pp. 103, 116, 118, 143, 146, 148, 161-62, 169.

31. Paquier, pp. 186-87; Salesse, pp. 166, 170, 187-88; Paquier and Cretin, p. 172; Jackson, pp. 134-35.

32. For an interesting summary of the American experience, see Dewitt S. Copp, *A Few Great Captains* (Garden City, New York: Doubleday, 1980).

You've got the stick

THE COCKPIT WARNING LIGHT READS "REFORM"

COLONEL THOMAS A. FABYANIC, USAF (RET)

PERIODIC reform is an absolute necessity for any institution that intends to maintain its viability in the face of extensive external change or prolonged internal degeneration. Even a cursory examination of history will unearth numerous examples of political, economic, social, and military institutions that failed to meet the challenge of adaptation. A detailed study of these institutions, moreover, would reveal that in some instances collapse occurred at the very time institutional self-assessments were rendering judgments of basic soundness.

In military institutions, the need for reform usually becomes fully evident only after a clear military crisis of major proportions. This sequence of events need not be the case, however, since the external and internal causative factors that would indicate the need for reform quite often are evident beforehand. To recognize them, one needs to understand fully the phenomenon of war and, equally important, how it might be affected by prevailing and emerging circumstances. Such awareness, regrettably, is not apparent in today's U.S. military establishment.

If one views war within a Clausewitzian framework consisting of society, its government, and its military, and then applies that structure to the profound changes that have been occurring in much of the Third World, the first of several reform challenges for the U.S. military becomes very clear. Far-reaching political, economic, and social changes—accompanied by rising expectations—are evident throughout Latin America, the Middle East, and Southeast and Southwest Asia. Evident also are the conflicts likely to result, as well as our seeming inability to deal with them militarily. It is obvious that our employment concepts for "low-intensity conflict" or "constrained operations" are virtually nonexistent, and it is equally apparent that the conventional force structure available to us for use is based on an unsubstantiated assumption that what deters the Soviets will function adequately anywhere. Moreover, there appears to be little recognition that without prior development of employment concepts this force structure will remain irrelevant, regardless of its potential and flexibility. Vietnam and Lebanon are the most obvious examples of what probably lies ahead; whether future historians will view them as the beginning of the end of America's military prowess or as turning points in the continuing effort to achieve unparalleled military conpetence will depend largely on how we assess them now.

A far greater challenge, however, is an internal one involving the degeneration of our military organizational structure. In the course of organizational evolution, we have experienced a loss of military function. Anyone familiar with the existing structure can see the deficiencies readily. The Office of the Secretary of Defense (OSD) has become an institution within an institution; it routinely involves itself in professional military matters such as strategic and logistical planning and operational issues to include strategy and tactics. Too much authority is vested in the Secretary of Defense. By law, the secretary is responsible for professional military matters; but with very few exceptions, the individuals holding that office have not demon-

strated sufficient competence. In the words of one analyst, "they found on-the-job training imperative," and "few passed the primer stage before they were replaced." The power vested in the secretary and OSD explains, in part, the corresponding lack of influence by the Joint Chiefs of Staff. In effect, the latter have been removed from the chain of command and replaced by bureaucrats who, for the most part, have no professional responsibility for the defense of the nation. The net results of this prolonged degeneration are obvious; they cast long, bold, and dark shadows that stretch from Vietnam, to a desert landing site in Iran, and thence through the remnants of a city called Beirut.

The most serious internal challenge, however, concerns professional military competence. Our only real reason for being, which is war, is not understood by many officers. All too frequently, war is viewed as a great engineering enterprise; and, as a consequence, we prepare for war as it appears on paper rather than as it is likely to occur on the battlefield. Crucial issues at times are turned over to civilian experts who, like the bureaucrats in OSD, have no long-term, direct responsibility for the nation's security. Such actions are necessary because *programs* still dominate *purpose* in the Pentagon and program managers continue to hold sway over strategists. The "management mania," although somewhat subdued, remains with us. Moreover, it is likely to remain, in part, because of the military's willingness to pay 75 percent of tuition fees for its officers to receive advanced degrees in business, management, and public administration. Given all this presumed management expertise by the uniformed military, one is tempted to ask, for example, why our defense procurement practices are in such a shambles. Those difficulties, when viewed in the context of our previously mentioned operational inadequacies, make one wonder whether we have sacrificed our previous military competence for a measure of managerial incompetence.

Perhaps it is time to reestablish ourselves as a professional military organization, one that understands war and knows how to prepare for it, deter it, and, if necessary, fight it across a spectrum of conflict. Fortunately, we have some professional officers who possess an understanding of war, and it is they who are capable of meeting the challenges of adaptation. My advice to them is, "Burners, *now*"!

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The study of war has all but atrophied in the U.S. The best minds in the U.S. military have become managerial and technical experts; but they have not studied their own professional discipline.

Steven Canby, *International Security Review*, Fall 1980

R commentary

To encourage reflection and debate on articles appearing in the *Review*, the Editor welcomes replies offering timely, cogent comment to be presented in this department from time to time. Although content will tend to affect length and format of responses, they should be kept as brief as possible, ideally within a maximum 500 words. The *Review* reserves the prerogative to edit or reject all submissions and to extend to the author the opportunity to respond.

ON INVENTING HISTORY

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I WOULD like to reply to the attack by Lieutenant Colonel Barry D. Watts and Dr. Williamson Murray on the thesis set forth in my book *Operation Barbarossa: Strategy and Tactics on the Eastern Front, 1941.**

From the accounts given by the Soviets regarding the January 1941 war games, it is impossible to say precisely how the games were played and what the rules of engagement were. It is possible, however, to create a scenario for these games by making judicious use of different available sources. It must be stated outright that the Soviets themselves have never made the claim that they devised a strategy to combat the German onslaught before the war began. Many substantive reasons for creating a scenario for the strategic defense of the Soviet Union are given in *Operation Barbarossa*. Colonel Watts and Dr. Murray point out that although my book relies heavily on Soviet sources, those same sources take pains to prove that the Soviet Union was caught off guard by the attack. I would make no attempt to deny that the Soviets have portrayed themselves as innocents, lambs waiting for the slaughter by Hitler's wolves, but the facts simply are otherwise. Even the best sources cited by my critics go to prove the contention that the Soviets were aware of the German plans and responded positively, skillfully, and secretly to thwart them. Let us examine two key passages by General S. P. Ivanov *(Nachal'nyy period voyny)* cited by my critics to prove that the General Staff had no plans for a deep defense of Soviet territory but simply a plan to repel the German invasion using the forces massed along the frontier in the Bialystok and Lvov salients.

> Since carrying out the missions designated by the plan was to be executed in the form of a retaliatory strike after the strategic deployment of the main forces of the Red Army, in the first stage of the initial strategic operations the covering armies deployed in the border zone should, by active defensive operations with the support of aviation and the tactical reserves, repel the enemy thrust and thereby provide for the concentration and deployment of all the forces designed for making the retaliatory strike. (p. 105)

Again, quoting Ivanov:

> Thus, according to the general strategy of the Soviet High Command, the immediate strategic aim . . . consisted in repelling the first strike of the enemy by using the troops of the first strategic

*Lieutenant Colonel Barry D. Watts, USAF, and Dr. Williamson Murray, "Inventing History: Soviet Military Genius Revealed," *Air University Review*, March-April 1985, pp. 102-12

> echelon (the covering armies and the reserves of the border districts), in securing the concentration and deployment of the main forces of the Red Army, and in creating favorable conditions for making a retaliatory strike against the enemy. (p. 105)

There is nothing in Ivanov's account that contradicts, in any way, my thesis that the Soviets had prepared an in-depth defense of the Soviet Union in 1941; on the contrary, these two passages reinforce this contention. It must be realized that the Soviets use cryptic or Aesopian language when discussing their strategic defense in 1941. That is, they have not been telling out-and-out lies, but still the whole truth is difficult to come by in what they say. Simply put, Ivanov is saying:

- The covering armies—the forces of the first echelon and the tactical reserves—had the mission of repelling the German attack. (Note: the tactical reserves in the Western District were located in the 13th Army area around Minsk.)
- The first echelon had the mission of securing the forward areas to allow time for the concentration and deployment of the *main forces of the Red Army* (my emphasis)—that is, the strategic reserve.

This is precisely what I said in *Operation Barbarossa* when I outlined the missions of the three echelons of defense. My critics make much of the fact that these mission requirements called for the first echelon to repel the invader. Again, the General Staff assigned this task to the first echelon, but it did not risk the survival of the Soviet State on this eventuality. That is why the tactical echelon forces were deployed along the Dvina-Dnepr line. No one has ever explained why, if the Soviets were caught by surprise, the following deployments were ordered by the General Staff Directive of 13 May 1941:

- The Twenty-second Army was moved from the Urals to Velikie Luki, north of the Dvina,
- The XXVth Rifle Corps was moved from the Kharkov District to the Western Dvina,
- The Twenty-first Army was moved from the Volga District to Gomel,
- The Nineteenth Army was moved from the northern Caucasus to Belaia Tserkov south of Kiev.
- The Sixteenth Army was moved from the Transbaikal District to Shepetovka in the Ukraine. (In mid-June the Sixteenth Army's destination was changed to Smolensk on the Dnepr.)

It should be noted here that before the 13 May Directive, already in place in the Western District's reserves in the tactical echelon were (1) the Twentieth Army at Smolensk; (2) the Twenty-fourth Army at Yelnia in the land bridge between the Dnepr and the headwaters of the Desna, 82 kilometers southeast of Smolensk; and (3) the Twenty-eighth Army behind the Desna, south of Yelnia.

The total size of the operational echelon before the war was about ninety-six divisions, although not all of these units were fully manned. In addition, eleven more divisions were held as a reserve directly under control of the Supreme Command. The hefty size of these forces concentrated along the Dnepr-Dvina line and in the western-central Ukraine proves that the Soviets were not relying on their frontier defenses, the tactical echelon, to turn the German tide. On the face of it, it seems ludicrous to suppose that the General Staff and Stalin would have gambled on one major battle in the frontier zone, especially after Pavlov's failure in the January war games. The gamble on one major battle would also have meant ignoring the major theoretical concepts of deep battle that had been worked out by Triandafilov and Tukhachevski in the 1930s. As far back as 1934, Tukhachevski in an article titled "The Character of Border Operations" had warned that in modern war the only tactic that could succeed would be that of preparing a defense in depth, leading to a protracted conflict with broad fronts and deep operations. According to Tukhachevski, the initial contact

along the frontiers would be important but would by no means decide the issue if the defending side had prepared for an echeloned "deep-battle" defense hundreds of kilometers in the interior. The Soviet Field Regulations of 1936 (PU-36) in fact embodied the combined-arms, deep-battle plan for war.

My critics say that my thesis that the Soviets had prepared an in-depth defense in 1941 is unnecessary to explain anything; that Erickson and others are right in their belief that the Russians were caught by surpise and were totally unprepared for war. I suppose that Einstein might have had the same kind of critics who believed that Newtonian mechanics were adequate to explain all physical phenomena. I would like to call for all interested parties to examine the physical evidence of the Soviet deployments on the eve of the war, especially in the areas of the tactical echelon on what would become the flanks of German Army Group Center, and try to explain these deployments on the basis of lucky happenstance. No, Erickson and the others were right as far as they went, but it is time now to push on from the myths of the past and examine the situation in the light of the new data as we know it to be.

My critics charge also that I have no special claim or resources to allow me to penetrate a Soviet strategic deception that has been in place since 1941. Let me digress for a moment and explain the peculiar circumstances that led me to discover the truth behind the deception. When I first began my research in the summer of 1971, no one was convinced any more than I that the standard interpretations of surprise were in fact true. It was only after an exhaustive search of the microfilmed records of German units in 1973 at the National Archives and my subsequent studies at the Bundes Militaer-Archiv in Freiburg in 1974-75 that I realized that something about this interpretation was terribly wrong. One only has to go through the records of some of the infantry units, especially the Second Army on the southern flank of Army Group Center, to realize that the Soviet forces encountered west of the Pripet area had to have been in place for some time and were well prepared to repel the invaders. Another case in point was the experience of a tank battalion of the German 10th Panzer Division, which, along with some motorized infantry, overran some Russian artillery positions to the east and south of Yelnia. According to the German report, "these emplacements were especially well-constructed, with accommodations for both men and horses, and had obviously been completed for some time." (*Barbarossa*, p. 132.) This incident took place on 20 July 1941, or only four weeks after the war began.

The point is that no one to my knowledge had ever looked before at quite so many records of German units, especially the nonarmored units, and gotten the full picture of what the Soviets were doing. Indeed, even with my time-consuming research, I was barely able to scratch the surface of the information in the German records. Other historians will find a wealth of material in the National Archives that, I believe, will further substantiate at least the main lines of my thesis.

The other part of the concern about Soviet strategy, or lack thereof, comes in the area of why the Soviets themselves have not yet owned up to the facts and admitted what they were doing. Also, why have so many of their memoirists, General Georgii Zhukov for example, not taken credit for their exploits? The answers to these questions expose many of the dilemmas that the Soviets have faced since the war. The fact is that they have admitted what they have done—if one is conscious of their unique, Aesopian, Alice-in-Wonderland methods of expression, as demonstrated in the passages from Ivanov. Zhukov's memoirs are a masterpiece of subterfuge; he was trying as best he could to tell the truth to the Russian people and the world, insofar as his political masters would allow him. Zhukov provides the key, if he is read correctly. For an example, read again a passage from Zhukov that I quoted in *Barbarossa*. This passage shows that Zhukov was telling the

truth, but not in a clear and straightforward manner. It also shows that Zhukov had taken to heart the lessons he had learned from the January war game with Pavlov.

> In recent years it has become quite common practice to blame the General Headquarters for not having ordered the pulling up of *our main force* from the interior zone in order to repulse the enemy. I would not venture to guess in retrospect the probable outcome of such an action. . . . It is quite possible, however, that being under equipped with anti-tank and anti-aircraft facilities and possessing lesser mobility than the enemy forces, our troops might have failed to withstand the powerful thrusts of the enemy panzer forces and might, therefore, have found themselves in as grave a predicament as some of the armies of the frontier zone. Nor is it clear what situation might then have developed in the future on the approaches to Moscow and Leningrad and in the southern areas of the country. [*Barbarossa, p. 42. Emphasis mine.*]

The reasons why Zhukov was not allowed to tell the whole truth and why the Soviets have failed to explain their strategic plans before the Great Patriotic War are not difficult to understand:

- It is important, politically, that the Soviet Union always appear as the nonaggressor.
- The Soviet leadership, even today, cannot admit to its own people or the world that the sacrifice of the tactical echelon (some 48 divisions) along with large areas of the western U.S.S.R. was deliberately taken into calculation and that no attempt was made to evacuate Soviet civilians from territories certain to be occupied by the Germans.
- The Communist Party leadership cannot admit even to itself that it lied to Pavlov, the Western District commander, allowing him to commit fully to a battle to save the Bialystok salient without intending to provide him the reserve forces he needed to prevent his forces from being consumed in the German mechanized grinder.
- The strategic plan for defense was a good one, in that it worked, albeit with many modifications.

It was a crucial part of Zhukov's plan that the deception to be employed would have to be good enough not only to fool the Germans but also, unfortunately, the commanders in the border districts. The frontier armies had to stand and fight, letting the Germans armored pincers flow around them. In this role, they would retard the advance of the German infantry and prevent the panzers from plunging farther eastward too rapidly. This delaying tactic would allow time to consolidate the forces of the operational echelon and call up the strategic reserve. Pavlov could not be made privy to the real plan for defense, for he had shown himself to be an avid advocate of the idea that his mechanized corps could withstand the onslaught of Army Group Center's two panzer groups led by Colonel General Heinz Guderian and German Hermann Hoth. Zhukov could not dissuade Pavlov from his acting out his own fate and so he elected to make the best use of what he knew to be a hopeless situation in the Bialystok salient. The newer tanks, the T-34s and KVs, were not formed into brigades and moved directly to the frontier zone. They were withheld for use along the Dnepr-Dvina line, although those newer tanks already in the salients were allowed to remain where they were, together with the older tanks.

In response to the charge that I did not take the logistics of *Barbarossa* into account, I can only say that my long discussion about the Paulus war game in December 1940 was intended to show the difficulties of logistics. Also, I made repeated comments about the problems of getting ammunition, petroleum products, and spare parts to the front. With just these circumstances in mind, I suggested that the Soviets should have held the Oka line during the winter in order to improve the supply situation for a spring 1942 offensive, which, I believe, would have succeeded.

The Soviet Union survived because its military and political leaders were able to assess the objective lessons of history and their strategic exercises accurately. These lessons are no less

valid today, and the Soviets' long-range strategic planning for Europe, Southwest Asia, and Central America no doubt rests on the same kind of analysis.

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ON COMMUNICATION CLIMATES AND SUCCESSFUL ORGANIZATIONS

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IT is easy to believe that an "open" communication environment is necessary (and perhaps, even sufficient) for organizational success. However, this is not necessarily the case, and Major Charles Beck's article overlooks the nuances of organizational dynamics that belie the black and white prescriptions he suggests.*

Major Beck's thesis is built on a model, attributed to Jack Gibb, which I believe to be biased and fundamentally flawed. Beck imagines organizational communication climates to be ranged along a continuum between the extremes of "supportive" to "defensive." It is curious that one of these extremes is given a positive-sounding label while the other is defined negatively. One could, with no greater connotative bias, have labeled the respective ends of the continuum "permissive" and "firm." The point is that the ends of continua are, by definition, extremes and often are not desirable or rational choices of behavior. In the case of the Beck/Gibb model, I imagine "lax" or "indifferent" to be an appropriate name for the communication climate opposite "defensive."

Similarly, the six "dichotomies" described by Beck are not dichotomies at all but, rather, only six pairs of arbitrary alternatives that ignore many other possible courses of action. As in the basic model, Beck gives one alternative in each set a positive-sounding name and burdens the other with a pejorative term. Again, the terms are not really antitheses of one another. By so biasing his model, Beck easily concludes that supportive communication climates are good and that defensive ones are bad. I believe that the problem is much more complex than that.

Let's look at some of the situations portrayed in Beck's article. The "superior-equality" case is inappropriately titled and gives the impression that a manager has only one of two choices. Moreover, the "equality" choice seems to be the one preferred by Beck. Personally, I have never been particularly comfortable working for a boss whom I considered an "equal." I may know more about my technical specialty than he or she, but my boss is the leader presumably because he or she has a broader view of the picture, greater expertise, superior judgment, or a combination of these or other qualifying characteristics. Certainly, the boss ought not to "put down" subordinates whenever they propose new ideas, but patronizing his or her subordinates is not the answer either. By defini-

*Major Charles E. Beck, "The Open-Door Policy: Communication Climate and the Military Supervisor," *Air University Review*, May-June 1985, pp. 45-51.

tion, in a hierarchy, supervisors and subordinates are *not* equal—period.

Beck's second situational example, "evaluation-description," provides a similarly false dilemma. A major part of supervision is, in fact, evaluation—there is nothing intrinsically shameful or distasteful about that. Beck seems to suggest that subordinates will become disheartened if they perceive that their boss is evaluating them and that consequently they will be "reluctant to approach the supervisor for fear of 'looking bad'." Since when should subordinates not feel responsible for their performance? I have difficulty imagining an effective organization where the workers don't feel some discomfort when they haven't measured up to the boss's expectations.

Similar comments may be addressed to the other four "dichotomies." My observations over the years, as well as some management theories more current than Gibb's 1961 analysis, suggest that "open" communication is not the end-and-be-all for organizational success. Unfortunately, many theoretical and practicing managers seem to accept the desirability of "open" communication without question. I believe that they do so because they have accepted the temptingly simple argument that if subordinates believe they can communicate freely with management, their morale will soar and, in turn, organizational effectiveness will improve.

My view is that such a philosophy puts the cart before the horse. Specifically, high morale is just as likely a *result* of a highly effective, well-regarded organization as it is a cause. High morale and esprit de corps result from people's awareness that they have been challenged, have excelled, and have contributed to the accomplishment of the organization's goals.

Several years ago, morale was high in a section of a unit that I commanded, but, unfortunately, what little work was being produced by the section was of poor quality. When an opportunity arrived for some of the people of the section to participate in an extracurricular activity (involving several weeks' permissive TDY), I had to say no. Indeed, we all began working six-day weeks to correct the section's deficiencies. Initially, morale plummeted. However, as the quality and quantity of the work products improved, the pride, and therefore the morale, of the people of the section improved commensurately. Once performance reached the satisfactory level, there was time for the extracurricular activities.

In some situations, a relaxed communications climate is simply not desirable. To ferret out the dead wood, focus the effort, and instill a sense of responsibility in complacent employees, the most constructive management approach may, in fact, be to create a "defensive" communications climate, at least temporarily.

Throughout my comments here, I have used the words *situation* and *situational.* It seems obvious that a management model ostensibly constructed to apply to all situations is doomed to failure. Different circumstances call for different management approaches. A so-called supportive communication climate may be helpful in sustaining an already healthy organization but may be inadequate to turn around an organization in trouble.

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books, images, and ideas

The Defense Reform Debate: Issues and Analysis edited by Asa A. Clark IV, Peter W. Chiarelli, Jeffrey S. McKitrick, and James W. Reed. Baltimore and London: Johns Hopkins University Press, 1984, 370 pages, $30.00 cloth, $12.95 paper.

For those of us familiar with reform issues, *The Defense Reform Debate* is a disappointment. Before offering some reasons for this less than enthusiastic assessment, a few words about the origins and content of the book seem in order. Each year since 1963, the U.S. Military Academy has sponsored the West Point Senior Conference as an informal seminar aimed at facilitating frank discussion on a topic of "immediate and significant national concern" to current or future national security planning. (p. xiii) For 1982, the topic of defense reform was selected, and *The Defense Reform Debate* is the outcome of a two-day meeting on this subject held at West Point.

The volume consists of twenty-two essays dealing with various defense reform issues grouped into seven topical categories, such as a strategy overview, doctrinal issues, the organization of defense policymaking, and the outlook for defense reform. Brief introductions accompany each of the seven sections.

Six of the individual essays in *The Defense Reform Debate* were written or coauthored by one or more of the editors. Among the other authors whom most Air Force readers will recognize are such notables as Robert W. Komer (former Under Secretary of Defense for Policy), William S. Lind, Congressman Newt Gingrich, William J. Perry (former Under Secretary of Defense for Research and Engineering), military reformist Pierre Sprey, General David C. Jones (retired Chairman of the Joint Chiefs of Staff), and journalist James Fallows. The book also features a foreword by Samuel P. Huntington.

Read as a collection, the essays present a bewildering hodgepodge of disparate perspectives and opinions. By and large, each author is allowed to deal from his own private deck of facts, assumptions, and (in all too many cases) rules of logic. The upshot is less a debate than a babble of contending voices. Contentious questions and harshly discordant viewpoints abound, but palpable progress toward convincing answers or a modicum of consensus is not readily discernible.

Read independently, most of the essays in *The Defense Reform Debate* do not appear to merit any more praise than the book as a whole. True, a few essays have worthwhile ideas and are written without needless invective or throwing logic to the winds. In this category, Colonel Huba Wass de Czege's "Army Doctrinal Reform" offers an intelligent defense of the 1982 edition of the U.S. Army's field manual, FM 100-5, *Operations* (of which Wass de Czege was one of the primary authors). Similarly, General Jones's "What's Wrong with the Defense Establishment?" is well worth a trip to the library, offering an insider's candid account of how major decisions are really made at the Pentagon. But nearly all of the other essays in the volume are of poor quality.

Chapter nineteen, in which Jeffrey McKitrick and Peter Chiarelli attempt "to sharpen the [defense reform] debate by evaluating the competing arguments" (p. 310), deserves special mention in this context. Their analysis simply does not live up to its billing. As an all too representative case in point, consider their handling of the Vietnam War as a motivation for proposing organizational reform of the Department of Defense. Some people, they note, certainly *perceived* the eventual loss of South Vietnam at a cost of more than fifty thousand American lives and $150 billion to have been damning evidence of a structurally flawed U.S. defense establishment. But was it? McKitrick and Chiarelli never say. Rather than facing the obvious question, they delicately label Vietnam a "perceived failure," emphasize the bureaucratic and legal obstacles to changing the 1947 National Security Act, warn that policy deficiencies are not always necessarily the result of organizational deficiencies, and fret that even if deficiencies exist, organizational solutions may only create new policy deficiencies. (p. 311)

Continuing their appraisal of the Department of Defense organization for policymaking, McKitrick and Chiarelli turn next to the issue of whether the military has unique and valuable advice to inject

into the "policymaking process." Again, an obvious question would seem to be: Does the military in fact have unique and valuable advice to offer? But again, McKitrick and Chiarelli's response is to duck the question. "*It is possible* that advice from military leaders may be valuable because of the individual rendering the advice rather than the fact that he or she is in the military." (Emphasis added, p. 312.) This revelation does not seem very profound.

Nor does this ducking the tough issues visibly abate as this "analysis" of organizational reform proposals plays out to its conclusion. Regarding the complex tradeoffs between readiness for the war we might have to fight tomorrow and long-term requirements for force modernization, McKitrick and Chiarelli solemnly conclude: *It may be better* to have a more modern, less ready force than a less modern, more ready force if faced with the prospects of a world war." (Emphasis added, p. 312.) And on the value of innovation within the military, they are satisified with the pronouncement that "*at times* consistency and continuity of effort are at least as good, if not better." (Emphasis added, p. 314.)

What seems to be the bottom line here? Evidently McKitrick and Chiarelli's view is that because objections of the if-fish-had-wings-they-could-fly variety can be raised against any and all motives for structure change of DOD, proposals for reorganization are without merit.

It is regrettable that Clark, Chiarelli, McKitrick, and Reed were unable to accomplish all that they advertised. As Congressman Newt Gingrick and Major Reed say in their essay, "Guiding the Reform Impulse," what could well be ultimately at stake in the current defense reform debate is "literally the possibility that freedom as we know it may not be here thirty years from now." I heartily agree. But precisely for the long-term sake of the American republic, individuals on all sides of the reform debate need to start checking their emotions, lowering their voices, and searching honestly for assumptions, facts, and concrete conclusions on which a majority of those involved can agree. Sadly, *The Defense Reform Debate* helps with none of these things.

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Mr. Madison's War: Politics, Diplomacy, and Warfare in the Early American Republic, 1783-1830 by J. C. A. Stagg. Princeton, New Jersey: Princeton University Press, 1983, 532 pages, $18.50.

The War of 1812 is perhaps too often seen episodically as a brief and discrete period of early American history in which the administration of James Madison moved inexorably toward a confrontation that it subsequently mismanaged. In *Mr. Madison's War*, Professor J. C. A. Stagg counsels us wisely to eschew a narrow view of the causes that led to an outbreak of hostilities with Great Britain and to place the war in the larger historical context of an enduring and tenacious debate between Republicans and Federalists over the limits of federal power and sovereignty, the tension of the domain of intercontinental commerce generated by the irreconcilable goals of both American and British political economics, and the role that Canada was to play for the young republic in the resolution of its domestic and international problems. By establishing a case for an expanded frame of reference, the author restores a much needed perspective to the issues. *Mr. Madison's War* is consequently a big book, not only for the questions it attempts to answer, but for the questions it ultimately poses about the nature of war as an instrument of public policy.

Of special interest to the student of military history is the emphasis that Professor Stagg places on the actual conduct of military campaigns in the various theaters of conflict and how the notion of the war itself was supposed to serve broader interests. Professor Stagg concludes that the failure of the war to promote these interests does not reflect simply the inadequacy of a strategic and tactical conception of effective operations. Rather, the inconclusiveness of military action demonstrated the degree to which the wartime political and economic structure of the young republic was inadequate for the support and realization of the administration's grand design to eject the British from North America. In the broadest sense, then, Professor Stagg's study documents the restraints of civilian and military authority with respect to a mutually agreed-on hierarchy of priorities and what disastrous consequences ensued thereafter in the area of military logistics, relations between regular army and state militias, federal and state financing of the war effort, and the mobilization of manpower. What emerges from the author's inquiry is a visible and comprehensive pattern of a war lost before it was ever fought.

To his study, Professor Stagg brings a synthesis of several fields of research, a meticulous ability to sift and analyze sources, and a keen intelligence applied to the discovery of concealed assumptions. These qualities are particularly evident in the penetrating manner with which the author describes and treats the details of individual military engagements.

Already in its second edition and the winner of the National Historical Society Book Award for 1984,

Mr. Madison's War is on its way to becoming a standard study of the War of 1812.

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The Navy and German Power Politics, 1862-1914 by Ivo Nikolai Lambi. Winchester, Massachusetts: Allen and Unwin, 1984, 449 pages, $37.50.

The tremendous buildup of the German navy prior to World War I and the arms race with Great Britain that resulted are topics that have long fascinated historians. Most accounts have focused on the political and diplomatic aspects of Germany's naval expansion, but Professor Ivo Lambi's massive study of the German navy from the 1860s until World War I takes a new and important approach by concentrating on the strategic and operational planning of the navy and showing the effects of this planning on foreign policy and on naval training, doctrine, and readiness.

Although Lambi covers the timeframe from 1862 to 1914, his main focus is on the period after 1890. The limited goals and minor wartime contributions of the German navy prior to 1890 are summarized in the first fifty pages of *The Navy and German Power Politics, 1862-1914;* afterward, Lambi examines in detail the aimlessness and confusion of German naval planning and construction during the 1890s, culminating in the appointment of Admiral Alfred von Tirpitz as the navy's top official. The rest of the text is in many respects a chronicle of the rise and fall of the famous Tirpitz Plan. Lambi shows how Tirpitz was able to convince the other members of the naval leadership, the Kaiser, and finally the legislature to support his proposal for a major expansion of the German navy, particularly concentrating on battleships. This success led directly to Germany's ultimate failure in World War I, however, as the growing naval rivalry between Britain and Germany forced the British into the arms of Germany's continental opponents. Within the German navy itself, criticism of the Tirpitz Plan grew. Nevertheless, neither the top naval officers nor the civilian leaders of imperial Germany were willing to abandon Tirpitz's program of naval expansion even after his basic assumptions about Britain's diplomatic position had proved false in the final decade of peace. Planning for wartime naval operations also remained unrealistic, as the navy failed to change its plans even though prewar naval maneuvers showed that Germany could not combat a distant British blockade effectively.

Lambi's study of the German navy prior to World War I is an important contribution to literature on military planning, pointedly revealing the lack of coordination among the various military and civilian agencies at the top levels of imperial Germany, the ineffectiveness of the German navy during the war, and the interrelationship of military planning and diplomacy. *The Navy and German Power Politics, 1862-1914* is not aimed at the general reader, for it assumes considerable knowledge of the military and governmental structure of imperial Germany. One improvement that would make the reading easier would be the addition of charts illustrating the confusing and often conflicting lines of authority within the German navy and government. Although the events covered by Lambi took place more than three-quarters of a century ago, there are still lessons in them for today's military and political leaders. Interservice competition for funding and inadequate interservice coordination are not problems limited to imperial Germany alone, and consideration of the diplomatic implications of military plans remains essential.

Dr. Gregory W. Pedlow
University of Nebraska-Lincoln

Sailors and Scholars: The Centennial History of the U.S. Naval War College by John B. Hattendorf, B. Mitchell Simpson III, and John R. Wadleigh. Newport, Rhode Island: Naval War College Press, 1984, 354 pages, $13.00.

There is something about the U.S. Navy that has seemed inimical to higher education for its officers. The Naval War College, founded at Newport, Rhode Island, in 1884 and thus the world's oldest institution of its kind, is an example of this attitude, as the authors of *Sailors and Scholars,* all of whom have ties with the college, make clear.

Plagued in its early years by efforts to divert its faculty and facilities to other activities (no classes were held during five years of its first decade), the college developed slowly, hampered by uncertainty as to its purpose—should it be primarily an educational institution or another advisory group to the Secretary of the Navy?—and by the unwillingness of the Bureau of Navigation to detail officers to take its courses. During the twenty years following World War I, however, the college flourished in a modest way. A clear educational philosophy had evolved, the curriculum was strengthened, and promising officers were selected for attendance. By 1941, only one of the admirals who qualified for fleet command had not taken a Naval War College course.

Following World War II, the Navy's principal wartime leaders spoke highly of the college's importance, and its future seemed assured. But the complexities of the postwar international scene, the rapidity of technological change, and the Navy's inability to integrate completion of Naval War College courses into its promotion system combined to undermine that assurance. Considering Newport, Rhode Island, an intellectual backwater, naval officers sought to attend other armed forces colleges, especially those in the Washington area, and the rapid turnover of college presidents, most of whom insisted on changes that could hardly be effected before they were relieved, militated against consistent development.

Due mainly to the interest of successive Chiefs of Naval Operations, this unfortunate trend was reversed during the 1970s. "By 1984, the prime requisites to achieve fully the vision which [its founder, Commodore Stephen B.] Luce had proclaimed were finally in place: systematic guidance at the highest level within the Navy, carefully chosen college leadership, and increasingly more students selected on merit in courses taught by a first-class resident faculty." (p. 322)

The authors have produced a useful, generally readable account of the Naval War College's first century, integrating its history with those of the Navy and the nation quite effectively. Students of naval history and of higher education in the armed forces cannot ignore *Sailors and Scholars.*

Dr. Robert E. Johnson
University of Alabama, Tuscaloosa

Voices from the Great War by Peter Vansittart. New York: Franklin Watts, 1984, 318 pages, $14.95.

Voices from the Great War is an excellent introduction to this titanic struggle. Having sampled widely and well, Peter Vansittart has woven his various selections skillfully together to provide a kaleidoscopic anthology that neatly ranges over the military, political, diplomatic, and cultural events of the entire period. The strength of this work is in its diversity. From Henri Barbusse to Archduke Francis Ferdinand, from Oskar Kokoshka to Rosa Luxemburg, the soldiers, revolutionaries, artists, politicians, and historians all get the opportunity to speak. Each individual contribution merges with the others to form a rich context against which the individual excerpts can best be understood. Taken together, they provide a moving portrait of the Great War.

Voices captures the emotions that surrounded this great tragedy. The oft-discussed euphoria of 1914 was symbolized forever by Rupert Brooke's famous "Now God be thanked Who has matched us with His hour," a poem celebrating the liberation that the war seemed to be offering to Brooke and his generation from a "world grown old and cold and weary." By war's end, however, the mood had shifted dramatically, as the savage bitterness of Siegfried Sassoon's "Aftermath" with its poignant refrain, "Have you forgotten yet? . . ." so graphically illustrates. *Voices* allows the reader to trace the gradually shifting, often conflicting moods from Brooke to Sassoon with hundreds of fascinating stops in between.

This book is not a military history. The campaigns are only summarized, often in a paragraph, sometimes in only a few words. Vansittart also deliberately concentrated on the war on land, so readers seeking excerpts or impressions of the war at sea or in the air will be disappointed. As with any anthology, criticisms might be offered about selection: why this passage and not that one? This survey is so broad, however, and so searching that such criticisms here would be even more pedantic than usual.

Voices from the Great War is highly recommended for anyone who would like to get the "feel" of this most interesting and tragic conflict. As a sampler of the moods and emotions and shifting opinions that surrounded the Great War, this work is unsurpassed.

Major Gary P. Cox, USAF
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Sassoon's Long Journey: An Illustrated Selection from Siegfried Sassoon's The Complete Memoirs of George Sherston edited by Paul Fussell. London: Oxford University Press, 1983, 180 pages, $19.95.

Among the remarkable military narratives growing out of the First World War, few have endured so well as Siegfried Sassoon's semifictional, largely autobiographical three volumes: *Memoirs of a Fox-Hunting Man* (1928), *Memoirs of an Infantry Officer* (1930), and *Sherston's Progress* (1936). Together, they trace one man's change as he, the fictional Sherston, crossed that chasm separating the idyllic, bucolic life of the young English country gentleman—innocent, devoted to horses and the pastoral countryside—from the postwar, obsessive disillusionment that his generation of writers (like Hemingway in America or Remarque in Germany) so dramatically chronicled.

Sassoon/Sherston's genuine exploits, even hero-

ism, in the trenches are counterpoised against his growing disillusionment with those leaders in Great Britain who were directing that country's war efforts. In July 1917, he published *A Soldier's Declaration* to explain his refusal to serve further in a war that was futilely wasting lives. He believed "that the war [was] being deliberately prolonged by those who [had] the power to end it." Expecting a court-martial, he was instead sent to a British army hospital where, increasingly troubled by his feelings of kinship to and responsibility for his men when his own safety was assured, he persuaded his psychiatrist to authorize his return to the front. In July 1918, he was wounded a second time and evacuated to England, where he reentered the literary scene which he had only slightly known before the war.

Sassoon's Long Journey presents essential passages from the Sherston trilogy supplemented by letters and reminiscences from others to trace the fictional hero's changes from his enlistment on 5 August 1914 through to the end of the war. In microcosm, as he reveals his romantic notion of war based on his fox-hunting days in the Weald of Kent, performs with boldness in action (receiving a Military Cross and two wounds), and comes to his more mature vision of war, duty, and sacrifice, we see the changes that took place in Great Britain, and perhaps in America, as a whole. A hundred photographs, some previously unpublished, illustrate the work; those of the trenches and the men Sassoon so admired have been carefully selected to complement the words with a visual poignancy. Paul Fussell, already acclaimed for his original work in *The Great War and Modern Memory*, has contributed a significant summarizing introduction to the book and has selected sensitively from Sassoon's poetry and letters to reveal many of the autobiographical qualities of the narration.

Nevertheless, no matter how much one admires Sassoon's work, no matter how frequently a historian might turn to Sassoon for some evidence of the reality of trench fighting in that now-distant war, we still must ask what the purpose of this particular version of Sassoon's work might be. To introduce Sassoon? Hardly likely, for the specialist already knows his writing, and to a casual reader the title certainly has no significance. To illustrate Sassoon's work? Hardly necessary, for the books stand by themselves. To use Sassoon's words as text for newly found photographs? Hardly needed, for the photos are dramatic enough. No, the purpose seems to be to create an easier, shorter version of the trilogy for a world grown too busy or too far removed to take the time or to make the effort of imagination to understand the complete work. It might appeal to those who, having seen the television production, might want to look a little further. Despite that limited appeal, we can conclude that in its own finely done way—no matter how earnestly presented—this book is a more expensive and authoritative kind of illustrated classic comic book. This one is more skillful, more significant than those comic-book versions of Shakespeare, Melville, and Dickens that continue to be read by children, but the purpose is still the same: to lure readers who otherwise might not bother. The difference here is that although it is not needed any more than the comic-book classics (Sassoon's books attract and hold readers perfectly well without illustrations), *Sassoon's Long Journey* is done remarkably well.

Colonel Jack M. Shuttleworth, USAF
U.S. Air Force Academy, Colorado

JFK: Ordeal in Africa by Richard D. Mahoney. New York and Oxford: Oxford University Press, 1983, 338 pages, $17.95.

Richard Mahoney's study, which is based on thorough documentary research and interviews with more than 200 persons, fills a void for the general and the specialized reader about the Kennedy administration's policy toward the Congo, Ghana, and Angola. Apart from a weak introductory chapter (in which the author dismisses the entire European experience in Africa as a dark imperialist conspiracy and acclaims the emergence of the often brutally violent and unstable nationalist movements as a legitimate form of political expression), *JFK: Ordeal in Africa* provides a wealth of information about how U.S. foreign policy was made during the early 1960s.

In the chapters about the Congo, for example, Mahoney discusses both the CIA plot to assassinate the pro-Soviet Patrice Lumumba and the interworkings of the Congo Task Force (an interagency group of senior American officials), which recommended that "the UN be given the right through the Security Council to use force to bring Congolese military factions under control and to cut off outside assistance." More important, however, is the revelation that Kennedy's indecision and vacillation about America's role in Africa was at least partially responsible for prolonging the bloody Katanga secession crisis and plunging the Congo into chaos. Unfortunately, there is no mention of the role played by the U.S. Air Force in helping to restore order throughout the entire area.

As author Mahoney indicates, Kennedy's naiveté also characterized relations with Kwame Nkrumah,

the Ghanaian leader who, because of erratic economic policies and personal greed, drove his country eventually into bankruptcy. In addition to allowing himself and his administration to be bullied by Nkrumah before and during a Washington meeting, Kennedy believed that he could buy the leader's loyalty by financing the massive Volta dam project. Later, after Nkrumah called for the expulsion of 300 Peace Corps volunteers and several American diplomats, a frustrated JFK swung to the opposite end of the spectrum, characterizing Nkrumah as "some kind of nut."

Regarding U.S. relations with Angola, Mahoney discloses how Portugal's Prime Minister Antônio Salazar used the threat of withdrawing American military rights in the Azores to hamper Kennedy's efforts toward hastening the decolonization process. He also points out that JFK's desire to maintain friendly ties with both belligerents "left the United States with neither Angola nor the Azores."

Unlike many writers who sanctify the Kennedy administration, Mahoney assesses America's entry into the murky world of independent African politics candidly: "In the end, the expectations proved far greater than the achievements, the memories far grander than the actual record."

Dr. Thomas Ofcansky
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Imperialism and Dependency: Obstacles to African Development by Daniel A. Offiong. Washington, D.C.: Howard University Press, 1982, 304 pages, $6.95 paperback, $12.95 cloth.

The issue of why many nations in the Third World, particularly in Africa, are poor and "why they remain underdeveloped relative to their counterparts in Western Europe and North America" is the main question author Daniel Offiong, a Nigerian sociologist, addresses in *Imperialism and Dependency*. In seeking an answer, Offiong uses the neo-Marxist dependency model, rejecting what he terms "the bourgeois sociologists' explanation of Third World underdevelopment" and dwelling instead on "the analysis of the methods and techniques used by the monopoly capitalists to impoverish the Third World." (p. xi)

Offiong argues that underdevelopment in the Third World is not an original state but results from economic dependence on foreign powers, primarily the United States and Western Europe. African dependency is rooted in the African slave trade and nineteenth-century Western colonialism, which created an unequal economic and political relationship that continued after grant of nominal independence. The present world economic order is neocolonial and imperialist because it perpetuates Third World dependency and prevents true economic and political independence. Rejecting Western aid and loans as inadequate and finding multinational corporations enormous impediments to development, Offiong nonetheless concludes that the Third World can reduce its economic dependency through effective controls on multinationals, regional economic groupings, and discussions with the rich nations.

There is little to recommend this volume: Offiong's arguments have all been made before, and his basic premises are difficult to accept. To blame the West alone for fostering African dependency and underdevelopment is fallacious, as recent events in Offiong's own country attest. Among indigenous obstacles to developments, he mentions only self-indulgent elites, ignoring entirely such fundamental impediments as poor soils, meager natural resources, widespread disease, unskilled labor, bad planning, and irresponsible government.

The book rests almost entirely on secondary sources, all too often of questionable value; and Offiong has consulted almost none of the reports of the World Bank, U.N., or USAID. At no point does he outrightly reject them, but even if he cannot accept the adequacy of these development institutions, the analytic and statistical data in their reports should surely find application in what is, after all, a book about international development. In general, the resource base is far too thin to support the attempted analysis, and the whole study suffers from a lack of rigorous scholarship. Offiong quotes primary material through secondary sources; he makes sensational, unsubstantiated allegations; he frequently argues on the basis of Nigerian materials alone; he provides no bibliography; and the text badly needs copy-editing. The interested reader would do well to disregard this volume and turn instead to Peter Gutkind and Immanuel Wallerstein, Giovanni Arrighu, Samir Amin, or Walter Rodney for analyses of underdevelopment and dependency in Africa; a serious student would also consult the World Bank, United Nations, and the United States Agency for International Development.

Dr. LaVerle Berry
Alexandria, Virginia

The Reign of the Ayatollahs: Iran and the Islamic Revolution by Shaul Bakhash. New York: Basic Books, 1984, 276 pages, $18.95.

Shaul Bakhash, a former Iranian newspaper edi-

tor who more recently was Visiting Professor of Near East Studies at Princeton University, has written a penetrating account of the tumultuous events in Iran from the revolution that ousted Shah Mohammed Reza Pahlavi through the first years of the Islamic Republic. Much attention is devoted to Ayatollah Ruhollah Khomeini's "towering presence" in these affairs. Bakhash traces Khomeini's opposition to the Shah back more than twenty years and describes how it turned into an attack on the institution of the monarchy itself. He uses Khomeini's writings and speeches to describe the ayatollah's revolutionary ideas for the creation of an Islamic state under the vice-regency of Islamic jurist-clergymen who alone, Khomeini insisted, were capable of directing the just society. The constitution of 1979 legitimized these ideas, as well as Khomeini's personal authoritarian control.

The author attributes the fall of the Shah to mounting opposition to his arbitrary rule and to demands for constitutional government and protection of human rights. Bakhash has some interesting comments about the impact of the Carter administration's pressure for human rights. While opposition to the Shah initially was centered in the professional and middle classes, once the clergy became aroused, the masses also were drawn in. It was in that maelstrom of discontent that the Shah's indecision made his position untenable.

The provisional Islamic government, installed in 1979 under Mehdi Bazargan, represented moderate elements of the revolution but never had a chance. Encouraged by Khomeini and other ayatollahs, revolutionary committees, guards, and courts soon paralleled and bypassed governmental institutions, and it was they who dictated the course of events through arbitrary decisions and violence.

The efforts of President Abolhassan Bani-Sadr to establish secular control of the state led to his impeachment and signaled the beginning of a reign of terror against left-wing and other dissidents. That resulted in thousands of deaths before the opposition was crushed late in 1982, when the terror began to abate. Bakhash says that Khomeini then gave his support to moderate elements, some semblance of order took hold, and the government became better able to address pressing economic matters.

The thrust of *The Reign of the Ayatollahs* is primarily political, with little attention to the fate of the Kurds, Baluchis, or other minorities. Nor is there much discussion of the religious persecution of the Baha'is. Foreign affairs also receive cursory treatment, although there is comment on the Iran-Iraq War, the interest of the Islamic Republic in spreading its revolutionary ideas throughout the Muslim world, and Iranian relations with the United States and the Soviet Union.

Bakhash notes that the Islamic Republic has proved more durable than many anticipated, but he is pessimistic about its future: "The regime consolidated its power by ruthlessly eliminating rival political parties and political dissent. But it remains the prisoner of the instruments of repression it had perfected in the process." He believes that the situation will be particularly ominous following Khomeini's death, when the factionalism and dissidence will "reemerge with force."

The author states that it was his intention to "capture both the immediacy and historical significance of these momentous events." He has succeeded ably. After reading this book, although respect for the ayatollahs will not be enhanced, one will better understand their motivations and passions.

Dr. George W. Collins
Wichita State University, Kansas

Airship Saga by Lord Ventry and Eugene M. Kolesnik. Poole, Dorset, United Kingdom: Blandford Press, 1982, 192 pages, $16.95.

Written by and intended for airship enthusiasts, this well-illustrated volume features an eclectic collection of essays on various aspects of lighter-than-air development during the twentieth century. Idiosyncratic in structure, the extent and quality of coverage seem to depend on the material that happened to be available to the authors (who more properly might be listed as editors). Great Britain, for example, receives considerable attention, with memoirs of uneven literary and historical merit by such distinguished pioneers as Wing Commander J. N. Fletcher, Major J. Struthers, Squadron Leader T. P. York-Moore, and Air Vice-Marshal P. E. Maitland. On the other hand, Germany, which made more significant contributions to airship history, is allotted a single—if excellent—memoir by Captain Hans von Schiller, onetime commander of the *Graf Zeppelin*. As for the United States, Lord Ventry and Eugene Kolesnik apparently were unable to locate appropriate firsthand material; they settle instead for a brief recitation of events, based on standard secondary sources.

As Lord Ventry makes clear in the introduction, *Airship Saga* is meant to counter recent sensational and inaccurate books that focus on airship disasters. In contrast, it emphasizes "the achievement of the airship in terms of the triumphs of technical skill, courage and human endurance." (p. 9) Ventry certainly attains his objective. The "silver fish of the

sky" were technological marvels, and the valiant men who flew them deserve our admiration. However, he is less successful when he tries to convince the reader, first, that the airship came to grief because of hysterical reporters and spineless politicians or, second, that (except for highly specialized tasks) such vehicles have a viable place in our current transportation system. The appearance of the intercontinental airliner in the 1930s doomed the great airships; since then, the disparity in speed between airliner and airship has grown ever wider. As long as society values speed, the outlook for Ventry's "airship renaissance" seems unpromising.

Dr. William M. Leary
University of Georgia, Athens

Living and Working in Space: A History of Skylab
by W. David Compton and Charles D. Benson. Washington, D.C.: Scientific and Technical Branch, National Aeronautics and Space Administration, 1983, 449 pages.

Living and Working in Space is a product of NASA's internal history program and, as such, attempts to fulfill two goals: (1) to provide the general public with insight into the background and development of NASA programs and (2) to provide documentation of program management issues and how they were resolved in order to aid NASA managers in accomplishing future programs. The need to satisfy these two goals results in a book that suffers because of its hybrid nature.

The flow of the narrative is disrupted often by what appears to be excessively detailed, step-by-step accounts of the resolution of technical problems encountered or of bureaucratic in-fighting within NASA. This bothersome tendency is particularly pronounced in Part II, which examines how hardware developed for the Apollo program was modified for earth-orbital operations. However, this volume does a good job in Part I of providing insight into how political and bureaucratic considerations (with resulting budgetary fluctuations) can impact long-term research and development programs, often outweighing, in the short run, the scientific and engineering goals of the program. Indeed, as authors W. David Compton and Charles Benson point out, a permanent station orbiting the earth had always been the assumed first step in space exploration. Planning for such a station was preempted by President Kennedy's announcement in May 1961 that a manned moon landing was America's immediate goal in space. Part II, despite the interruptive passages, does an equally fine job of chronicling the various Skylab missions and providing a preliminary assessment of the program's results. In summary, although *Living and Working in Space* is not easy reading throughout, it is informative and provides a wealth of detail on the many issues that can arise during the course of a large R&D effort. This publication, as others in the NASA History Series, can be ordered from Superintendent of Public Documents, Government Printing Office, Washington, D.C. 20402.

Dr. Thomas J. Moore
Wright-Patterson AFB, Ohio

The *Air University Review* Awards Committee has selected "BMD, SDI, and Future Policy: Issues and Prospects" by Dr. Donald M. Snow as the outstanding article in the July-August 1985 issue of the *Review*.

the contributors

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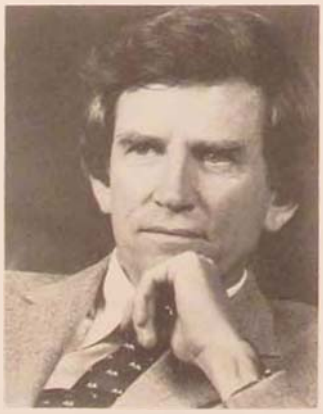
Gregory D. Foster (USMA, M.S., University of Southern California; M.A., Central Michigan University) is a consultant on national security affairs, civil-military relations, and futures research. He has been director of research and manager of Washington operations for the Foreign Policy Research Institute, as well as director of the Center for Security and Policy Studies, Science Applications, Inc. His articles have appeared in *Armed Forces and Society, Naval War College Review, Parameters,* and *Strategic Review*. He is coauthor of *Paradoxes of Power: The Military Establishment in the Eighties* (1983).

The Honorable Denny Smith (B.A., Willamette University) was elected to the United States Congress in 1980 and represents the Fifth Congressional District of Oregon. Congressman Smith is House Cochairman of the Military Reform Caucus and is a member of the House Committee on the Budget, the House Committee on Interior and Insular Affairs, the Vietnam Combat Veterans in Congress Caucus, the Grace Caucus, the Aviation Caucus, and the National Republican Congressional Committee.



The Honorable Gary Hart (B.A., Bethany Nazarene College; B.D., Yale University School of Divinity; LL.B., Yale Law School) is the senior U.S. Senator from Colorado in the United States Senate, where he has served for ten years and currently is a member of the Senate Armed Services, Budget, and Environment and Public Works committees. His public service began with the Department of Justice. Later he moved to the Department of Interior and practiced law in Colorado. In 1972, he directed Senator George McGovern's presidential campaign; and in 1984, he was a candidate for the Democratic nomination for president. Senator Hart was a cofounder and the first cochairman of the Congressional Military Reform Caucus.

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