Critical Issues

Reforming The Military

Edited by
JEFFREY G. BARLOW

The Heritage Foundation

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PREFACE

The essays in this volume first came to my attention several months ago, at a time just after Ronald Reagan's Inauguration. The Heritage Foundation had just published our *Mandate for Leadership* study, which, among other things, had advocated an increase in the FY 1982 defense budget of some $35 billion. This suggestion was fully in line with the Foundation's continuing support for a strong national defense. And yet in these new articles before me an entirely different concept was being presented. These essays, written by respected defense analysts, argued that the way to improve the fighting effectiveness of our general purpose forces was not to spend significant amounts of additional money on them but instead to restructure the way that they were organized, equipped, and employed.

It is a concept which I am still evaluating, but nonetheless one which deserves a wider audience. The fact that The Heritage Foundation is publishing these papers should thus be taken more as an indication that we understand the value of open discussion of new ideas covering all aspects of the Federal Government than as evidence that our trustees or staff necessarily agree with the specifics of an author's proposals.

There will be those who will dismiss these new ideas out of hand, simply because they challenge existing defense arrangements. They are wrong. It is incumbent upon all those who take a serious interest in our national security to give them a careful reading and evaluation. While we certainly accept the mission of the Department of Defense, the policies of the Department should be examined as rigorously as those of any other government department.

Edwin J. Feulner, Jr.
President,
The Heritage Foundation

FOREWORD

The start of a new, avowedly conservative, presidential administration is a propitious time for the supporters of a strong national defense to re-examine the basic principles that are guiding the accumulation and maintenance of our military strength. For a number of years now, we have been hearing about the general decline in the effectiveness of our general purpose forces—the dramatic increase in the Army's recruitment of marginally-qualified and unqualified (Category Three and Category Four) personnel, the Navy's continuing loss to civilian life of mid-career officers and petty officers with specialized skills, the ever decreasing numbers of fielded aircraft, ships and tanks with which to fight, and the overall downturn in military readiness.

The Reagan Administration has pledged to restore our defense posture to its former strength. For example, Secretary of Defense Caspar Weinberger recently testified that he would be increasing the defense budget (in Total Obligational Authority) by $6.8 billion in FY 1981 and by $25.8 billion in FY 1982.[1] Unfortunately, this promise is not as comforting as it should be.

The problem is that given the huge disparity that has been evident between Soviet and United States defense investment over the past decade, the newly promised increases will provide nowhere near the amount of money required to restore the U.S. general purpose forces, as currently constituted, to adequate strength. *Armed Forces Journal* editor Benjamin Schemmer made this point very forcefully when he wrote in his March 1981 issue: ". . . there are not enough dollars in *any* forseeable American defense budget, or any likely combination of them over next four or so years, for dollars alone to bridge the chasm that now exists between US and Soviet military capabilities."[2] Mr. Schemmer's assertion is bolstered by the sobering study of defense budget trends made by analyst Franklin Spinney, which reveals that in the years since the end of the Second World War, the longest period of sustained real growth in the defense budget has been only three years.[3] Mr. Spinney's study further shows that over the years the defense budget has been buffeted by the continuing tug of war between attempts to increase the Investment (procurement) sector of the budget and the inexorable rise in the O&S (readiness) sector of the budget.[4] As the defense analyst noted:

> In the short-term we try to shrink O&S and we try to pump up Investment; however, over the long-term, Investment is shrinking relative to O&S. In other words, we have not been converting our short-term desires into long-term reality.
>
> In a general sense, this pattern reflects a tendency to reduce our current readiness to fight in order to modernize for the future; however, because of rising operating costs, the price of even *low* readiness is rising inexorably over the long-term.[5]

In very stark terms, what these statements suggest is that at even the enhanced spending levels now projected by the Weinberger Defense Department we cannot expect to revive the fighting effectiveness of our general purpose forces sufficiently to counter the Soviet conventional military buildup.

The question which then arises is what can the United States do to remedy the situation? One answer might be to massively increase the Defense Department's funding over the next four or more years, but this flies in the face of recent history, as Spinney so cogently pointed out. Leaving that aside, however, these massive increases would require in actual outlays (not TOA) double or treble the thirteen percent increase in Total Obligational Authority that Caspar Weinberger has projected for FY 1982. And at a time when even the relatively small defense increases now planned are coming under fire from domestic interest groups which see their own budgets being cut back by the Administration, can we seriously expect that the Reagan administration or a majority of Congress would find additional and far more financially burdensome defense budget increases to be politically viable?

The authors of the following papers propose an alternative solution to this conundrum. They suggest that a general restructuring of our military forces, coupled with a rethinking of our strategy and tactics will provide the requisite strength without the need for major defense funding increases. Nevertheless, it is a solution that may well prove no less costly than the first, but costly in terms of required institutional change rather than in money. As these defense analysts see it, for far too long our defense managers, both civilian and military, have been caught up in a mechanistic attrition mind-set that, among other things, has caused them to ignore the very real problems that exist in the structure of the Armed Forces and has instead led them in search of weapons systems of ever greater technological complexity as a means of countering the Soviet Union's superiority of numbers. As far as these analysts are concerned, this attrition mind-set has engendered both a continuing defense procurement practice that supports the acquisition of advanced weapons systems that are ever

more complex and expensive and for which ever increasing capability claims are made (but which because of their high cost are obtained in gradually decreasing numbers), and a body of military tactics that is dangerously rigid and outdated and which is highly dependent for success upon the functioning of a series of magical "force multipliers" promised by these expensive new weapons systems.

Colonel John Boyd, who is something of a "gray eminence" herein because of his close association with a number of the authors of these papers, has postulated (in "Patterns of Conflict") that in the cycles of "observation-decision-action" which exist in all conflict situations it is the side that completes its cycles faster which eventually prevails. In this regard, it can be shown that beyond a certain level, systems complexity can actually slow the operator's reaction time, making him less likely to complete his "observation-decision-action" cycle faster than his opponent.[6]

The writers of the following articles share a common belief that the United States must build a genuine framework for the employment of its military forces—a framework that includes not only a realistic national strategy to which it can size its forces but also a body of military tactics for each Service that is based upon a careful, continuing study of military history and of the lessons provided by recent combat experiences. Several of the authors argue in these papers that the United States' ground combat forces must replace their outdated firepower/attrition warfare doctrine with a doctrine of maneuver and must give up the futile attempt to "manage" the battle through a complex set of communications links to central command posts in favor of allowing military commanders the flexibility (command initiative) to respond quickly to the changing circumstances always present on a real (as opposed to a theoretical) battlefield. Other authors argue here that the Pentagon's defense managers must move away from their fascination with technologically complex weaponry which promises greater lethality and cost effectiveness but can be obtained only at the price of far fewer numbers of deployed weapons; instead, they must move toward greater procurement of advanced but less inherently complex weapons systems which, because of their lower cost, can be fielded in the larger numbers necessary if our general purpose forces are to prevail in combat.

In summary, these authors believe that restructured general purpose forces—an Army and Marine Corps built around leaner, more cohesive and more highly maneuverable fighting forces and a Navy and Air Force equipped with larger numbers of lower cost, advanced design ships and aircraft—will be able to dramatically increase the United States' conventional military effectiveness over the long term. There is no doubt that the general thrust of these analysts' thinking has considerable merit.

It is normal to expect that some military professionals and civilian defense analysts with differing perspectives will find in these papers some ideas which they believe to be of questionable value. This too is a valid part of the process of change. Before new ideas can gain acceptance they must be subjected to thorough examination and testing—honed by the whetstone of practical experience into fully usable form. Yet before they can even be subjected to critical examination they must first be brought to the public's attention. If the publication of these short papers performs this service, it will have done its duty.

Jeffrey G. Barlow
Editor

Footnotes

1. The $6.8 billion TOA increase for FY 1981 includes an additional $2.8 billion for readiness, $645 million for personnel pay and benefits, and $2 billion in procurement funds. For FY 1982 the $25.8 billion figure includes an additional $8.7 billion for readiness, $2.7 billion for personnel pay and benefits, and $13.7 billion for procurement. *Statement By The Honorable Caspar W. Weinberger, Secretary Of Defense, Before The Senate Armed Services Committee, March 4, 1981,* copy of a typescript document, pp. 11-16.
2. Benjamin F. Schemmer, "Curing America's 'Strategy-Force Mismatch:' Strategic Initiatives to Bridge a Budget Chasm Too Big for Dollars Alone to Cure," *Armed Forces Journal International,* March 1981, p. 42.
3. Franklin C. Spinney, *Defense Facts Of Life,* December 5, 1980, unpublished, p. 6. This paper—the text of a lengthy military oral briefing—is available in limited quantity from the Public Affairs Office of the Department of Defense.
4. The O&S (Operations and Support) category represents the operating budget for the Armed Forces. It encompasses both the Operations and Maintenance (O&M) accounts and the military personnel accounts. The Investment category includes all the procurement accounts and the military construction accounts of the defense budget.
5. Spinney, *Defense Facts Of Life,* p. 8.
6. For example, the highly complex offensive avionics systems required for beyond visual range (BVR) target acquisition and tracking and launch of radar-guided, air-to-air missiles can slow the responses of a pilot conditioned to use them when he is forced in aerial dogfighting (particularly in multiple aircraft engagements) to fire his weapons against rapidly maneuvering, close-proximity targets.

1

Effectiveness or Mere Efficiency: Some Reflections

Edward N. Luttwak

The facts of America's military weakness, once the subject of fierce controversy, are now almost universally recognized. There are some, to be sure, who still assert that American military power is "second to none," if only for crass electoral purposes, and then again there are those who do not truly doubt the evidence but who nevertheless pretend to do so, because they are perfectly content with a weak America unable to resist radical change. But such views are now becoming marginal and are of diminishing influence both in the country at large and in Congress.

The emerging consensus on the inadequacy of our military power does not, however, translate into a corresponding agreement on the remedy. Given the decay of the Army, the unacceptable shrinkage of the Navy, the impoverishment of the Marine Corps and the crippling material shortages of the Air Force, not to mention the obvious inadequacy of the missile and bomber forces that provide our strategic nuclear strength, tremendous increases in the defense budget should logically result from this new consensus. But this is not happening.

To some extent, the explanation is simply a lack of political will to make the necessary sacrifice, but another, very different reason is also in evidence: even those who fully accept the magnitude and urgency of the need are extremely reluctant to finance a straightforward expansion of U.S. military forces in their present form. Here it is not the rejection of American power on ideological grounds that we encounter, nor the claim that other priorities remain more important, but rather some profound doubts as to the soundness of the present structures of the U.S. general purpose forces—their styles of deployment, their methods of warfare, and their equipment preferences. While simply adding more money to the budget could undoubtedly serve to remedy the gross deficiencies of the present forces by providing the men and machines, the skills and supplies now missing,

it is increasingly understood that the resulting increase in real combat capabilities would not suffice to make up for all of the years of relative decline *vis-a-vis* the military power of the Soviet Union.

Remedial action could make the forces we already have fit for combat once again, but could not provide the great increase in strength now needed. At the same time, however, there is a profound reluctance to expand our forces as now structured, equipped and deployed. It is not the *efficiency* of those forces that is being questioned, but rather their military effectiveness under the present strategic circumstances.* And yet while there is much controversy regarding questions of defense efficiency, about the pros and cons of reducing inter-service duplications, on the policing of procurement contracts, and on the detailed design of weapons, *effectiveness* questions of far greater scope are scarcely addressed. Is the Army's tactical doctrine, which seemingly offers firepower/attrition as the only solution to all combat problems, appropriate against a main enemy such as the Soviet Union? After all, against Soviet forces we could rarely expect to obtain a firepower advantage, while, on the other hand, the rigidities of the Soviet tactics should offer much scope for methods of agile maneuver. Is the structure of the Marine Corps relevant to the United States' strategical priorities? Is the Air Force right in its equipment preferences which provide it with the world's most highly visible fighter for air combat? And is the Navy right to build its cruiser/destroyer and frigate as defensive vessels with so little strike capability?

While it is obvious enough that such matters affect combat capabilities and, indeed, both cost and effectiveness to a far greater extent than do any of the efficiency issues, it is not really surprising that questions of petty bookkeeping receive far wider and more intense attention than issues of military effectiveness. In order to challenge the validity of the Army's FM 100-5 tactical doctrine, it is necessary that tactical and operational questions be debated by students of war, whereas the humble skills of the accountant are quite sufficient to deal with most questions of defense efficiency. And

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*Editor's Note:

As used here, efficiency is an economically-oriented term referring to the assembling of a military asset at a minimum of cost or waste. Effectiveness, however, is a militarily-oriented term referring to the ability of a military force to fight and defeat enemy forces. For example, a fighter wing might be an economically efficient force if it consisted of aircraft that required a minimum of maintenance (a low number of maintenance manhours per sortie—MMH/S) and yet prove ineffective in combat because the aircraft were not capable of performing the rapid, high-g maneuvering necessary to defeat enemy air-to-air missiles once they had been launched.

again, to argue that the Marine Corps should evolve into a long-range intervention force, with only a small portion of its force dedicated to amphibious "forcible entry," strategical issues must be addressed, and these cannot spring forth from slide rules and mere arithmetic. And the same is true of all combat-effectiveness questions: they require the application of military and strategic expertise and none is reducible to things easily measured and computed.

Thus, we continue to argue over matters such as "standardization," exchanging rival theories of cost-accounting while the far greater question of the military utility of what we are supposed to be standardizing is scarcely debated. What difference would it have made for the French Army in 1940 if its tank force (already larger than the German) had been expanded by ten, twenty or even thirty percent as a result of the economies of standardization? And again, what difference would it have made if skillful and dedicated engineers and cost accountants had managed to reduce building costs on the Maginot Line by five, fifteen or even fifty percent? In retrospect, it is obvious that the French would have gained much more from spirited debates on their national strategy—whose fatal contradiction was to combine a purely defensive *theater strategy* with a diplomatic policy of alliance with small powers in need of active protection. And then, both French theater strategy and its tactics were fatally flawed even in their own terms: the French theater strategy offered a thin linear defense against an enemy whose own method of war was designed to pierce such lines on narrow sectors, using the deep penetration of fast columns; French operational methods utilized the tank not as the core of all-mobile forces, trained for large-scale rapid maneuver, but rather as a supporting weapon for the foot infantry; and their tactics staked all on the use of concentrated artillery fire against an enemy whose tactics were by then based precisely on the evasion and circumvention of such firepower.

In our own case, it is high time that we move beyond cost-accounting debates and the fancier bookkeeping of "systems analysis," to address the really serious tactical, operational and strategic questions. If, as a result, we can break out of the straightjacket of the present heavy-handed attrition methods of the Army (which predetermine its small teeth-to-tail ratio), we might then find it possible to field many more combat units with little additional manpower, while also obtaining much more agile forces. If we could be free to restructure the Marine Corps, we might extract a truly deployable quick-intervention force out of it—readily air-transportable units with light-armor vehicles in lieu of full-weight tanks, heavy mortars in lieu of artillery; the whole supported by land-based aircraft of long range. We might even discover that the Air Force can both keep up its strength and yet maximize its day-to-day level of mission-capable

aircraft, if its insistence on high technology for technology's sake is replaced by tactical and operational priorities. And in the case of the Navy, we could once again establish a genuine supremacy, if ship design were no longer conditioned in large part by bureaucratic factors. What is now happening, by contrast, is that in lieu of tactics, we have bureaucratically-preferred procedures; in lieu of an operational art of war, we have the attempt to find high-technology solutions for every problem of war; and in lieu of strategy at all levels, we have only budgeting, programming and politics.

In the papers that follow, the focus is on military effectiveness rather than on mere efficiency. A good many of the ideas herein expressed are novel and therefore no doubt controversial, and readers will find much to disagree with (even the present writer hesitates before some of the judgments made below). But controversial or not, right or wrong, these papers can indeed serve us well if they prove to be the starting point of a renewed debate on the structures and workings of our general purpose forces. For there can be no adequate restoration of our military power without extensive reform, and there can be no reform without the sustained and critical analysis that only a wide-ranging debate on tactics, operations and strategy can inspire.

2

Military Manpower

Steven L. Canby

The nation is moving toward a new conviction that its military capabilities are faltering, partly because of our current problems in manning the armed services. Among the many concerns, the low caliber of recruits, the heavy losses of experienced specialists and technicians, the over-representation of minorities in ground combat units, and shortages in reserve manning levels head the list. The dim prospects offered by the demographics and economics of the 1980s can only increase present concern.

But there is less agreement on the remedy. Increases in pay and benefits, improvements in the management of manpower, and reductions in force levels are among the major recommendations of those who feel that the volunteer system should be maintained, while a small but growing group of critics recommends that it be replaced by some form of compulsory service. The military manpower issue is caught in an emotional crossfire between the proponents of voluntarism and the advocates of conscription, and it is as likely, under these conditions, to be settled on social and political grounds as on military effectiveness considerations.[1]

Unfortunately, while stating problems and solutions in this manner leads to a convenient input-output method of framing the issue, it also masks the workings of the *system* itself. It only addresses the outward manifestations of the system. Because the system is assumed as a given, there is no analysis of its effect on recruitment and retention or, more importantly, its effect on the performance of American military forces. The proposed solutions address the problems in the same way that the Department of Defense addresses them in its micromanagement of military manpower. That is itself a cause for suspicion, for those who created the systemic problem may themselves be part of it.

A return to conscription solves but three problems: it assures the Army of accessions representative of American youth; it assures the Navy, Air Force and Reserves of higher caliber (draft-induced) volunteers; and it reaffirms a neglected principle of American

society—that citizenship carries burdens as well as privileges. Otherwise, peacetime conscription leads to a host of inequities—inequities which are compounded if, in an effort to lower the apparent cost of defense, those selected for military duty are paid less than the majority of their age group left free to pursue their own interests.[2] Conscription does not solve the problem of retention and experience; it generally makes the problem worse, because an increased number of those receiving technical training are not inclined toward a military career.

It must be remembered that accessions—draft or volunteer—are an *input* and do not in themselves affect the *system.*[3] Accession type does not explain the near disintegration of the U.S. Army in the last stages of the Vietnam War, nor the state of discipline and tank gunnery in the U.S. Army in Europe today—now regarded by knowledgeable military observers as the lowest among the armies of the NATO central region. But the manpower *system* does explain it, as in addition, it explains the much higher incidence of psychiatric cases in the U.S. Army in World War II than among other major armies.[4]

Similarly, military pay must be increased to stem current unsatisfactory accession and retention rates. But this does not mean that more pay is the best way to obtain the required personnel quality or to stem the exodus, or that the pay is currently insufficient.* The pay caps of the Ford and Carter Administrations have been inequitable, have caused pay comparability with civilians to slide 15 percent in the last half decade, and are partly responsible for the present personnel exodus. But it is also true that the cost to the government of military salaries considerably exceeds the cost of comparably valued civilian wages. The problem is that the structure of military pay is so complex and convoluted that military pay is poorly *perceived* by its recipients. Too little military pay is in the form of cash and too much is in the form of contingent, in-kind, and, even more significant, deferred benefits.[5]

Above all, retention rates reflect the sense of accomplishment, job satisfaction and family satisfaction with military life (including a sense of community now lacking in much of American society) felt by service personnel. Many of these satisfactions are now missing from American military life. Until they are restored, retention rates will remain low, accession demands (especially for high-quality recruits)

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*Editor's Note:

For a fascinating insight into the question of whether low pay is the primary cause of lowered officer retention rates, see the survey sponsored by the Air Force Office of Scientific Research discussed in the *Air Force Times* in November 1980 and summarized in Franklin Spinney's *Defense Facts of Life,* p. 13.

will be difficult to attain, and military performance will remain little changed.

If the manpower problem cannot be solved by conscription or additional pay, how can we approach it? It is often argued that improvements in manpower management will solve the problems, or at least bring them under control. But it can be argued in turn that the Department of Defense is already micromanaging the manpower process. The demands of data processing, administrative efficiency and centralized control have resulted in the worst of all possible worlds: unit commanders have been robbed of the authority and the tools needed for molding cohesive military units while being saddled with administrative trivia. Centralization may appear efficient and streamlined, but in reality it saps the vitality of military units. And each year, the problem seems to worsen as DoD managers seek to correct the problem by ever greater centralization and by making additional demands for reports from below.

The Department of Defense approaches the manpower problem from a micro-analytical viewpoint. Its analytical community, dominated by psychologists and economists, accepts the current manpower system as a given. Not knowing military tactics or what creates excellence in combat, and having no sense of a comparative standard through knowledge of foreign military systems, it views the manpower system as sets of discrete functions. These sets are to be examined and their functioning refined, thereby improving aggregate performance. Unfortunately, this thinking involves two major conceptual errors: first, the assumption that the system is appropriate to begin with, and second, that the whole is but the sum of its (sub-optimized) parts.

Military manpower must be viewed as part of an organic whole, designed for the purpose of enhancing combat power. Effectiveness has two meanings: the ability to perform technical skills (e.g., aircraft maintenance) and the ability to out-perform (i.e., out-fight) the enemy. DoD manpower managers have understood the first but not the second of these tasks. The first is a logistical support task; the second a combat task. To out-fight an opponent requires, above all, better tactics. Good tactics, however, are as much a function of the manpower system as they are of doctrinal concepts. The best tactics—whether in the air, at sea, or in armored or light infantry warfare—are high-tempo operations, implying an ability to act and act again before the opponent can react coherently. A sound manpower system supports good tactics by providing cohesive units, lean organizations and all-level command initiative. Unfortunately, the American manpower system fails to provide any of these.

- A manpower system that continually turns its personnel over cannot produce stable, cohesive units. The result is that in wartime, the unit is liable to break under stress; in peacetime, individuals will suffer psychological isolation and drug abuse, and other signs of indiscipline will appear. In contrast, the British army with its regimental system produces highly cohesive battalions that are well known for their discipline in both peace and war.

- A manpower system that assigns its most capable personnel to technical services and staff duty cannot produce units and subunits capable of command initiative and independent action. Initiative requires spontaneity—an ability to sense and exploit opportunities. To be successful in battle, a commander must be able to make on-the-spot decisions and actions. Command initiative is *not* to be confused with centralized control and decentralized action—which is the aim of DoD's command, control and communication (C^3) programs. The German Blitzkrieg exemplifies the former; the Soviet army the latter.

- A manpower system that overmans its line units cannot produce responsive formations capable of high-tempo maneuver. American units have been designed for positional warfare and to remain on-line for prolonged periods. Rather than adopting a policy of rotation among the large number of units, the U.S. Army has opted for a few large units with built-in staying power (ability to absorb casualties) and sustainability (organic logistics). This policy is questionable for positional warfare; it is totally inappropriate for armored warfare or for the more fluid styles of (light) infantry warfare.

Manpower systems are thus very much a determinant of wartime performance. Good tactics require units capable of bearing stress, of recognizing and exploiting fleeting opportunities and of moving responsively. The same variables affect peacetime performance. Units that are not cohesive have poor morale and are difficult to train. Excessive training drives up operations and maintenance (O&M) costs. The combination of high O&M requirements and sustainability explains much of the U.S. Army's notoriously low teeth-to-tail ratio.

The Air Force and Navy are, by nature, different from the bulk of the Army. The central problem for these services is the need for continuing maintenance of sophisticated equipment. Their manpower needs are therefore oriented toward the recruitment and retention of highly-trained personnel who are needed to service and operate such equipment. High turnover in the labor force in these services is

not desirable. Yet DoD retains for all four services a high turnover system geared for "youth and vigor," the putative requirements for the infantry and for rapid wartime mobilization.

The Air Force and the Navy require manning practices comparable to those used by civilian high-technology firms. Specifically, the high-technology services need to increase the productivity of their work forces—to increase their skills and experience levels while reducing their numbers. Sophisticated equipment cannot be adequately maintained by an apprentice- and journeyman-level work force, regardless of the number of personnel employed. Yet this is the common military practice.

In many specialities, additional experience will increase performance, but will result in no reductions in manning (save for the indirect effect of reduced demands for training). In other areas (e.g., maintenance), productivity will result in lower manning levels. A skilled (mobilized-in-place) technician in the Air National Guard does the work of three in the active air force. The Swedish Air Force manages its force similarly, and has a plane-to-man ratio (including mobilized-in-place civilians) nearly four times that of the U.S. Air Force.

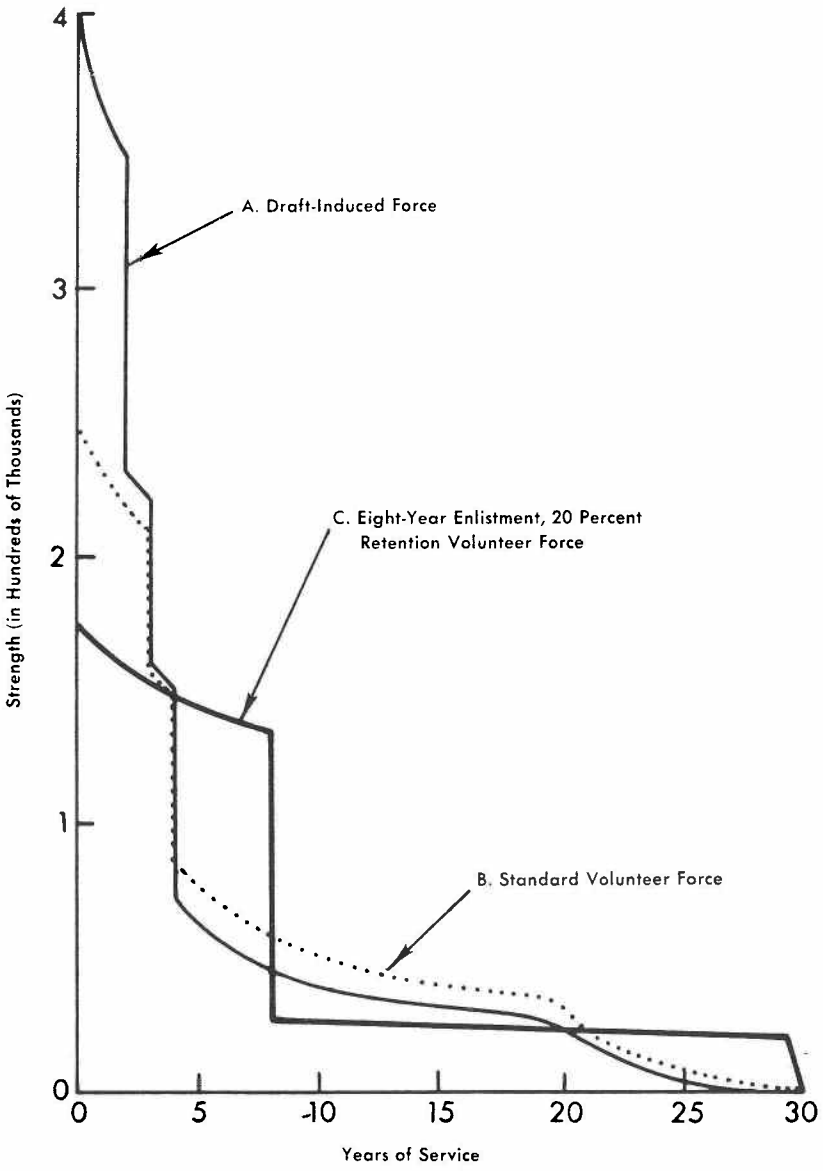
A shift to civilian technicians or to long-term service personnel would result in a profound change in the years of service profile. This change is portrayed in Figure I in the shift in the years of service profile from large numbers of rapid turnover accessions, largely in training, to an older, more experienced force.[6] Greater use of civilian (mobilized-in-place) technicians moves the curve down even more.

A force profile resembling Figure I would do much to solve today's manpower problems and, equally important, to release the funding necessary to make the transition to the more effective, lower cost structure outlined in this paper. The force profile implies a low turnover throughout the military, leading to stable, cohesive military units. The sharp drop in accessions would virtually eliminate the recruiting problems of the Army, even while the age cohort shrinks in the 1980s. This is particularly true with the use of civilian technicians: each would now replace the need for three high-quality accessions, some of whom would gravitate to the ground combat arms, providing them with the spark needed for good infantry.

The change could produce savings approaching some $10 billion annually, much of it coming from fewer retirements and from reductions and consolidations in the large schooling and training-base establishment. These savings would be in addition to the benefits that would accrue from a more productive and effective force—fewer personnel would be needed in the aggregate, O&M costs would be lower, and, perhaps most important, the greater proficiency and prestige of the American military would have a bracing effect internationally.

Figure One

Enlisted Strength Profile for Three Force Alternatives



Source: Canby and Butler, "Military Manpower Question," p. 209.

Footnotes

1. Martin Binkin, "Military Manpower in the 1980s: Issues and Choices," *International Security Review*, Fall 1980.
2. For a detailing of the equity issues, see Steven Canby, "The Military Manpower Question: Voluntarism or Conscription?," in F. Hoeber and W. Schneider, *Arms, Men and Military Budgets: Issues for Fiscal Year 1978*, (New York: National Strategy Information Center, 1977), pp. 240-285.
3. The exception perhaps being that in an attempt to make the service more attractive to accessions, discipline may be relaxed, leading to a breakdown in military performance that becomes manifest only when careerists opt out.
4. For an excellent diagnosis of this problem as well as other comparative aspects of the American manpower system, see Martin van Crevald, *Fighting Power: German Army Performance 1914-1945*, C & L Associates, Potomac, Maryland, forthcoming.
5. The cost issue developed in this chapter is outlined in Steven L. Canby and Robert A. Butler, "The Military Manpower Question," in F. Hoeber and W. Schneider, *Arms, Men and Miltary Budgets: Issues for Fiscal Year 1977* (New York: National Strategy Information Center, 1976), pp. 183-214.
6. In the particular profile illustrated in Figure I, retention at the eight year point is selective and only 20 percent would be retained for a full thirty-year career. The remainder would be given a cash bonus upon leaving service.

3

The Navy

Norman Polmar

The United States is highly dependent upon use of the seas for its political, economic, and military well-being. This situation will continue because of the dependence of the United States upon overseas resources and markets, its formal and informal alliances with nations across the oceans, and because sea-based systems provide the most survivable strategic strike force.

At the same time, Western use of the sea is being threatened by the dramatic increase in Soviet naval capabilities and operations, and by the proliferation of modern naval arms among Third World navies. The latter include anti-ship missiles (e.g., *Gabriel, Harpoon, Styx*) which require minimal technical capability on the part of the user, are relatively cheap, and can be fired by small craft as well as by larger warships, submarines, and, in some instances, helicopters and fixed-wing aircraft.

While American requirements for naval (and merchant) forces have remained high, the U.S. fleet has declined dramatically from the Vietnam War peak of more than 900 active ships and even from the pre-war levels of more than 800 ships. Today, the U.S. Navy has some 460 active ships. Even that number probably cannot be maintained beyond the 1980s without a significant increase in shipbuilding.

There are similar problems in naval aviation, since fewer combat aircraft are now being procured than are being lost through attrition and retirement. Additionally, the problems (program and technical) being encountered with the F/A-18 aircraft and the protracted delay in procurement of a replacement for the Marine Corps CH-46 and CH-53A/D assault helicopters presage major difficulties for naval aviation.

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*Editor's Note:

A "low-mix" force is composed of a significant number of ships which can effectively perform only a single mission. Frigates, because of their minimal surface warfare and AAW armament, are essentially capable of performing only the ASW mission.

A final consideration with respect to the overall size and composition of the U.S. fleet is the continuing trend toward a relatively "low-mix" composition.* Whereas in 1960 the active fleet had only five percent ASW frigates, current force levels and ships under construction will make over 25 percent of the smaller fleet of 1980 a low-mix ASW force.

The following pages address specific aspects of the fleet and make recommendations.

AIRCRAFT CARRIERS

The aircraft carrier provides a mobile, flexible, and politically independent air base. There are 12 large aircraft carriers in service (each with 80+ aircraft), plus one in long-term (three-year) modernization. Two additional 94,000-ton nuclear ships are under construction, to replace World War II-built carriers. Thus, with one ship in modernization, 12 large carriers should be available beyond the year 2000.[1]

The availability of sea-based air has long been important to U.S. policymakers. Carriers had a major role in Vietnam, from the Gulf of Tonkin incidents to the dramatic and hurried evacuation of Saigon; in the MAYAGUEZ incident; and most recently in providing the U.S. presence in the Indian Ocean (with an aircraft carrier serving as a base for the abortive Tehran rescue operation).

Reviewing potential trouble spots, given the NATO requirement for maintenance of at least two carriers in the Mediterranean, and increasing Soviet and Third World naval capabilities, it becomes obvious that 12 carriers will no longer be able to provide the necessary sea-based fighter/attack and ASW aircraft. The construction of additional large, nuclear-propelled carriers cannot be encourgaged, however. Their cost (almost $3 billion) and manpower requirements (approximately 6,000 personnel) make such ships difficult to procure and operate.

Instead, to *supplement* the 12 large-carrier force, the nation must immediately undertake a program to construct light carriers. Such ships, at about one-third to one-half of the cost and displacement of a large carrier, should be affordable in larger numbers.

Initially, a ship of about 35,000 to 40,000 tons should be procured, embracing merchant construction techniques, with an arrested landing system and one or two catapults. Such a ship could operate many current Navy-Marine Corps light attack aircraft (F/A-18, A-4, A-7) plus ASW helicopters (SH-2, SH-3, SH-60), and, of course, the existing VSTOL light attack aircraft (the AV-8 *Harrier*). These ships could operate E-2 airborne early warning (AEW) and S-3 ASW fixed-wing aircraft, albeit at considerable cost in support equipment. Operationally, these ships could support and enhance the capabilities

of larger carriers and, in other areas, sail with cruisers and destroyers to provide highly potent striking groups.[2]

Such light carriers could steam with larger carriers or, in lower threat areas, operate independently with cruisers, destroyers, or frigates, especially to counter submarine threats.

CRUISERS-DESTROYERS

The Navy's cruiser-destroyer force is sized primarily by the requirement to escort aircraft carriers. The present force of almost 110 ships provides adequate numbers. However, some of the ships are obsolescent, and during the next two decades about 50 will reach their 30th year, a nominal retirement age.

A program is underway to provide the fleet with between 18 and 24 *Aegis* cruisers. *Aegis* is an advanced electronics system for defense against both long-range and short-range Soviet anti-ship missiles, a capability that is today marginal at best. These cruisers are adaptations of the SPRUANCE-class ASW destroyer, 31 of which are built or building. (Four similar missile destroyers originally ordered by Iran are also being acquired by the U.S. Navy.)

The Navy believes that some 50 new missile destroyers will be needed by 2000 and has initiated the DDGX program. At this time, the lead DDGX is proposed for the Fiscal 1985 program (to be completed about 1989), followed by a series production.

The DDGX program requires scrutiny and redirection. Surface warships are in many respects the most vulnerable and most operationally limited ships. However, they could provide significant anti-air and anti-submarine capabilities, while the development of the *Tomahawk* missile offers an effective strike weapon. At this time, the DDGX is envisioned as a ship of some 7,000 tons (compared to 8,000 tons for the SPRUANCE and 9,000 tons for the *Aegis* variant). The size differential and more austere capabilities of the DDGX do not appear to warrant its development. Rather, the basic SPRUANCE design should be adopted for the DDGX, adding those *existing* systems required to make it an effective anti-air/strike ship (e.g., SPY-1 radar, *Tomahawk*, vertical launch system). Later ships should incorporate further innovations as appropriate.

DDGX should be modular, using the SEAMOD concept to facilitate improvements. Such a SPRUANCE-variant DDGX would be added to some 53-59 SPRUANCE-type ships in the fleet, greatly simplifying training, logistics, and maintenance. Rather than a 50-ship program, perhaps half that number should be firmly planned, beginning with the *Fiscal 1983* program. At the same time, development of a more advanced surface combatant incorporating advanced hull forms such as the high-speed Surface Effects Ship (SES) or the very

stable Small Waterplane Area Twin-Hull (SWATH) design should be reinstated and accelerated.

A number of benefits accrue to employing advanced hull designs, and coupled with cruise missiles, VSTOL aircraft, and other advanced systems, such designs could provide a much more capable destroyer-type ship.

FRIGATES

Frigates are smaller, anti-submarine oriented ships. The U.S. Navy will have some 110-120 ships of this category by 1990. The dilemma of frigates is that the Navy has "too many" for the predicted fleet size of the 1990s. Accordingly, there is little value in continuing frigate production and, indeed, several of the ships planned for the Fiscal 1981-1984 budgets should probably be cancelled. The only valid reason for constructing them at this time is to continue shipyard employment and viability. Perhaps a variant of the FFG-7 Class now in production could be continued with certain systems deleted but with a minimum of other changes for use by the Naval Reserve (in place of a planned FFX) and the Coast Guard.[3] This could help the shipbuilding industry while enhancing Naval Reserve and Coast Guard wartime capabilities.

Instead, all planned surface combatant resources should be reallocated to (1) increasing and accelerating the existing Aegis cruiser program, (2) redirecting a limited (~25 ship) DDGX program, and (3) developing an advanced surface combatant program for construction beginning in the mid-to late-1980s.

ATTACK SUBMARINES

Attack submarines are employed primarily for ASW and reconnaissance. A more recent (although not fully developed) mission calls for nuclear attack submarines to escort carrier groups. The Navy currently has some 75 nuclear attack submarines (SSN) and five diesel-electric submarines (SS). Additional SSNs are under construction to provide a force of just over 90 by the mid-1980s. From this point, with current building rates, the number will decline signicantly.

The current SSN-688 class submarines are large and expensive. The Navy's prime justification for this class is the increased speed (~5 knots) over previous SSNs. This capability does not justify the greater size (which causes certain problems) and cost. The 36 submarines of this class now built or under construction provide more than ample escorts for the 12 active carriers. No more should be built.

Instead, the proposed smaller nuclear submarine (FA-SSN) should be developed. It is very possible that using improved design techniques such a craft could meet or exceed the speed and depth capability of the SSN-688. The FA-SSN should be initiated with the

Fiscal 1983 program, with sufficient funding for 2-3 units per year to maintain a minimum force of 90 SSNs. In addition, a class of non-nuclear attack submarines (SSX) should be initiated. Several foreign designs, especially the German HDW-2000, appear suitable for adoption, as does an update of the U.S. BARBEL class (last built in 1959).

A finite time should be allowed to the Navy and industry to adopt a non-nuclear design for a construction start by Fiscal 1984. The SSX should be developed for U.S. ASW training, and to perform combat missions in forward areas where tenders are available for support.[4] SSX operations in restricted and shallow seas can be as effective or more effective (when on battery) than a nuclear submarine. And, of course, an SSX would be significantly cheaper to build and operate than an SSN.

AMPHIBIOUS SHIPS

The U.S. Navy currently operates 60 large amphibious ships with a combined theoretical lift capacity of one reinforced Marine division.[5] Some 15 percent of the ships are in overhaul at any given time, the remaining ships being divided between two ocean areas and amphibious squadrons continously deployed to the Mediterranean, the Far East, and (currently) the Indian Ocean. The forward-deployed squadrons of some 4-6 ships embark 2,000 Marines. Therefore, the division-plus lift calculation is a strictly theoretical one.

A new class of dock landing ships (LSD-41) is planned for carrying troops, equipment, and landing craft, with eight ships proposed for construction. Some number of these ships should be built, perhaps even the eight, to replace similar ships built in the 1950s. It is more important, however, that a new class of helicopter carriers (LHX) be initiated to replace the seven LPH-type ships that will be retired in the 1990s. These ships are vital to the Navy-Marine Corps team for amphibious assault, for carrying Marine VSTOL attack aircraft, and for operating Navy minesweeping helicopters. A minimum program of seven LHX-type ships should begin by Fiscal 1985-1986, even, if necessary, at the expense of the last couple of LSD-41s.

A variant of the LHX should be built as a small VSTOL carrier (VSS). Such a ship would complement the light carrier discussed earlier. It would serve in the presence mission, in ASW, as a mine countermeasures ship, and for power projection against Third World opponents. In addition, it could always embark Marines and troop helicopters on an *ad hoc* basis to rapidly enhance the amphibious force.

The forward deployment ships (T-AKX) now proposed for pre-positioning Marine equipment and supplies must be included in the amphibious category. However, they also must be acknowledged as a

special kind of amphibious ship. Initially, modified commercial cargo designs are acceptable, but for the long term, a more reasonable pre-positioning ship is one with a full or almost-full flight deck. This would facilitate the "marrying" of troops to equipment, and even the unloading of equipment and vehicles from ship to shore, given the use of the heavy-lift CH-53E helicopter. These factors are critical to the effectiveness of the pre-positioning concept. An austere variant of the light carrier/LHX should be considered for the advanced pre-positioning ship.

SHIP-TO-SHORE MOVEMENT

Ship-to-shore movement is a key element of amphibious operations. The Marine Corps is planning the development of a new series of amphibious tractors (LVTX), an air cushion vehicle landing craft (LCAC), and a new assault helicopter (HXM) to replace the aging CH-46 and CH-53A/D helicopters. Clearly, three separate forces, all to be developed within a single decade, will prove expensive to design, build, and operate.

The LVTX should be cancelled, while the proposed 50 LCAC assault craft, capable of carrying 60 tons at about 50 knots, should be developed. But major emphasis should go to the assault helicopter—or assault VSTOL. Future amphibious assault operations are likely to consist of only a few thousand troops going ashore, rather than the division-size assaults seen in years past, and against little or no opposition. The principal targets will be ports, airfields, government buildings, and other strategic installations. Helicopter assault appears the most reasonable method of troop insertion. However, with helicopters limited to speeds of about 170 knots, a VSTOL aircraft should also be considered for the assault mission, with the Bell tilt-rotor concept the most promising. The technology demonstrator XV-15 is successfully flying and gives promise of a 300-knot-plus assault capability. Thus, both an advanced helicopter (possibly the Army-Navy H-60) and the XV-15 should be developed for Marine Corps use.

A Navy-Marine assault force in the 1990s and beyond, concentrated on (1) aviation ships, embarking Marines to be landed by helicopter and VSTOL aircraft, and (2) pre-positioned supply ships that can provide heavy equipment for troops flown into the area, gives promise of being the most flexible, rapid-reaction, and capable force possible, within the nation's constraints on manpower and its responsibilities.

The conventional amphibious ships in service today and the new LSD-41s, all of which have helicopter facilities, would back up the above force with over-the-beach vehicles and supplies.

A shift of emphasis to vertical assault by the Marines could take

advantage of the proposed proliferation of flightdeck platforms (light carrier, LHX, pre-positioning ship, and, at a future date, SES and SWATH surface combatants, whose designs facilitate feature flight deck areas).

MINE WARFARE

The U.S. Navy has traditionally displayed little interest in mine warfare, either offensive or defensive, despite the effectiveness of mining campaigns in World War II, Korea, and Vietnam. With respect to offensive mine warfare, it is only after long gestation periods and delays that the Navy is procuring the CAPTOR deep-water ASW mine and developing the *Intermediate Water Depth* (IWD) mine, also for anti-submarine warfare. However, technical problems are causing a halt to CAPTOR production and the IWD has been temporarily halted because of a stupid administrative foul-up. Beyond its small mine stockpiles and its lack of availability of modern mines, the U.S. Navy lacks mine-planting platforms.

The principal means of planting mines is by aircraft—some 75 Air Force B-52Ds and Navy land-based patrol (P-3) and carrier-based attack planes. The availability of these aircraft during periods of crisis or actual conflict is limited. In addition, B-52s approaching the Norwegian Sea on mine-laying missions could be seen by the Soviets as the start of a pre-emptive strategic strike. Additional offensive minelaying capabilities must be developed. The mine is a cheap, effective, and politically attractive weapon.

"Plug-in" systems should be developed to permit cargo aircraft (C-130, C-141) and merchant ships to plant mines. Since U.S. attack submarines are severely limited with respect to the number of torpedoes and other weapons they can fire from their torpedo tubes, *external* mine carrying concepts must be developed. In addition, realistic mine development, production, and tactical concepts must be undertaken.

With respect to mine countermeasures (MCM), currently the only viable U.S. MCM force consists of 20 RH-53D minesweeping helicopters. There are also 3 active and 22 Naval Reserve-manned ocean minesweepers, all obsolete. A new class of about 20 small, slow minesweepers is planned. This capability is clearly inadequate in the face of Soviet and potential Third World mine warfare capabilities.

A more innovative MCM program must be rapidly developed. Several European nations have excellent efforts underway in this field. A "buy-in" on their technology and development seems appropriate for surface minesweepers. The program now starting for adapting the CH-53E helicopter to the MCM role (i.e., MH-53E) should be accelerated and expanded. These helicopters, capable of operating from most amphibious ships, as well as any type of carrier, provide

the most viable option available to the U.S. Navy today. And, the MH-53E aircraft would be readily convertible to the troop-lift role.

In the face of the Navy's limited interest in mine warfare and the success of aerial mining (especially that by the U.S. Air Force against Japan in 1945), serious consideration should be given to full Air Force involvement in all offensive mine programs.

NAVAL AVIATION

The Navy today operates 12 carrier air wings, each comprised of two squadrons of fighters (F-4 or F-14) and three of attack aircraft (A-6 and A-7), plus various ASW, AEW, reconnaissance, and tanker aircraft. The F-4 and A-7 aircraft are scheduled to be replaced by the F/A-18 lightweight (or, more accurately, medium-weight) aircraft. The F/A-18 is also scheduled for deployment with several Marine fighter and attack squadrons (see essay on Marine Corps).

The F/A-18 has experienced major cost increases and some technical problems, the latter tending to be exaggerated by its detractors and downgraded by its supporters. More significantly, however, the F/A-18 is not wanted by the Marine Corps as a replacement aircraft for its five attack squadrons now flying the outdated A-4 Skyhawk or, at a later date, for its three now flying the AV-8A *Harrier* VSTOL aircraft. Instead, the Marines wish to procure the AV-8B *Advanced Harrier*. (The five other Marine attack squadrons fly the all-weather A-6E.) Marine interest in the AV-8B, now fully supported by Congress against long-time Department of Defense opposition, will further increase the F/A-18's cost, as procurement quantities are reduced.

This situation, coupled with the technical difficulties of the F/A-18, opens the whole F/A-18 program to question. Immediate efforts should be devoted to developing an alternative to the F/A-18 procurement program for the Navy and Marine Corps, while continuing the AV-8B program for the Marines. The AV-8B, which could operate from the proposed light carriers, would help to pave the way for a Navy AV-8B+ (similar to the British naval concept of a *Sea Harrier*).

The dramatic plan in the late 1970s for the Navy to move to all (or almost all) VSTOL air wings by the 1990s has died. The reasons for the demise of the VSTOL proposal are complex and not yet fully clear. However, the *Advanced Harrier* (AV-8B) has survived as a derivative of the the existing AV-8A *Harrier*. In addition, the Bell XV-15 technology demonstrator is successfully flying and gives promise of an aircraft that can take off, hover and land vertically with a maximum speed of some 350 knots.

The tilt-rotor should be fully developed and produced for both Navy and Marine missions. For the Navy, it could provide the next

generation of ASW and AEW aircraft for use aboard large and light carriers. In addition, some number of such aircraft could supplement ASW helicopters aboard Navy cruisers and destroyers—providing AEW, long-range ASW, and over-the-horizon missile targeting functions. The missions are not now possible with ship-based helicopters.

For the Marines, the tilt-rotor could effectively supplement the existing and planned HXM assault helicopters, providing a high-speed capability not achieveable with rotary-wing aircraft.

The existing SH-2 LAMPS helicopters and the new SH-60B *Seahawk* ASW helicopters are invaluable for use aboard cruisers, destroyers, and frigates. These, supplemented by tilt-rotor aircraft in larger surface combatants (as well as on carriers), should considerably enhance the Navy's ASW capability.

Land-based patrol/ASW aircraft, now in the form of 24 patrol squadrons, should be continued.[6] Planning should be continued for a successor to the P-3 *Orion*, as that aircraft will begin to show its age by the 1990s. An adaptation of a commercial aircraft, or further refinement of the P-3C now in use, appear the most viable alternatives, although the large potential foreign sales for this type of aircraft may justify a new design.

CRUISE MISSILES

The decline in U.S. naval force levels, accompanied by the changing threats to U.S. ships, has been compensated for, to a small degree, by the development and deployment of the *Harpoon* anti-ship missile for use aboard naval aircraft, surface ships, and submarines. Similarly, the *Tomahawk* cruise missile will provide an enhancement of U.S. surface and submarine forces, both in terms of their long-range anti-ship (T-ASM) capability and, more significantly, their ability to undertake land-attack mission. The land-attack *Tomahawk* (T-LAM) can fulfill theater and theater-naval requirements, the latter including strikes against Soviet bases for naval *Backfire* and *Badger* aircraft and against port facilities.

COMMAND-CONTROL-COMMUNICATIONS/SENSORS

These areas of naval activity are exceedingly important to the efficient use of warships and have had greatly varying fortunes over the past decade. Top-level attention is required for comprehending the scope of the Soviet threat to U.S. naval C^3 sensors, particularly to the seafloor SOSUS submarine detection system, and for designing ways to counter it. Soviet literature makes it painfully clear they know of this system in great detail, and their lack of effort in quieting submarines suggests that they intend to overcome SOSUS and related sensors by one means or another.

In the same regard, U.S. ASW detection techniques and systems

have been oriented toward Soviet nuclear submarines. The Soviets also operate a large conventional submarine force, with construction of new units continuing. Third World operation of non-nuclear submarines also adds to the requirement for a broader ASW detection effort on the part of the United States, including additional advanced research in non-acoustic methods.**

PERSONNEL

The U.S. Navy, like the other services, is suffering considerably from personnel problems, particularly in the middle-level enlisted ranks and in the nuclear category (both officer and enlisted). This situation promises to get worse. In 1981, U.S. Navy ships are operating at a higher tempo than at any time since the Korean War. The recent nine-month overseas deployment of the carriers NIMITZ and EISENHOWER demonstrated once again how important warships are to U.S. foreign policy, but also highlighted the demands such extended cruises make on Navy personnel.

It has become obvious that the entire personnel compensation program must be overhauled. The Navy, because of sea duty and extended forward deployments, has special problems that must be recognized and taken fully into account in future legislation. The particularly acute problem of retaining adequate numbers of nuclear-trained personnel simply may not be solvable, which is an additional reason for not constructing additional nuclear surface ships and for looking at non-nuclear submarines.

BATTLESHIPS

The Navy has four mothballed IOWA-class battleships, 57,000-ton ships built in the early 1940s, each armed with nine 16-inch guns. While impressive and, in the context of their 23-mile gun range, powerful ships, they are nonetheless obsolete with respect to their command and control systems, air and missile defense systems, and so forth.

There was a proposal considered in Congress in 1980 to reactivate one of these ships and the idea has received favorable attention from the new Administration as well. (The NEW JERSEY was active in 1968-1969; all served in World War II and Korea.) It is not recommended here that any be reactivated. The ships require some 1,500 men to operate—too great a drain on the Navy's current manpower.

**Editor's Note:

The non-acoustic method now in widest use is magnetic anomaly detection, although the equipment now deployed suffers from limited detection ranges. Other methods of non-acoustic detection which appear of research interest include thermal wake analysis (for nuclear submarines) and radar detection of surface wake phenomena.

For that number of personnel, only nine large-caliber guns become available. While 100 or more *Tomahawk* missiles could be mounted on the IOWA-class ship by removing the aft 16-inch gun turret, carrying those missiles on five or ten SPRUANCE-class destroyers would provide a more effective force by increasing the number of available cruise missile platforms.[7]

The idea of upgrading an IOWA with a modern anti-air/missile-defense system, or equipping it to operate VSTOL aircraft or to carry Marines is most attractive, but too expensive in the context of what could be built for the $500 million (or probably more) that such modifications would cost. The money, if available, should go to providing another *Aegis* cruiser or some other fleet enhancement.

Finally, the question of reactivating the slightly newer (completed 1950) aircraft carrier ORISKANY has also been raised. This appears a more viable action than reactivating battleships. Although the ship would require some 4,000 personnel (including air wing), its 50-60 aircraft would make a significant addition to sea-based aviation, pending construction of the light carriers.

Footnotes

1. Eight oil-burning FORRESTAL class (completed 1955-1968); one nuclear ENTERPRISE (1961); and four nuclear NIMITZ class (1975-1988).
2. In addition to attack, reconnaissance, and limited defensive roles, the light attack aircraft could also provide over-the-horizon targeting for cruise missiles launched from the surface ships.
3. Systems that could be deleted from the Naval Reserve and Coast Guard variants might include the Mk-13 missile launcher, AN/SLQ-32 EW system, and AN/SPS-40 long-range search radar.
4. Submarine tenders or similar support ships are now based at Holy Loch, Scotland; La Maddalena, Sicily; and Yokosuka, Japan. At this writing, tenders are also at Guam and Diego Garcia.
5. At this time the Marine Corps has three divisions.
6. The Naval Reserve has 13 patrol squadrons with earlier models of the P-3 aircraft.
7. The EX-41 vertical missile launchers suitable for SPRUANCE class ships could permit *each* of these ships to carry 122 *Tomahawk* missiles or some lesser number plus *Harpoon* or ASROC weapons up to 122 units.

4

The Marine Corps

William S. Lind

The following few pages outline a clarification of the Marine Corps' mission and doctrine, illustrate a resultant force structure, suggest some manpower policy changes, and discuss some needed procurement and strategic mobility initiatives. The object in all cases is to provide a more effective Marine Corps, not arbitrarily to increase or reduce the size of the Corps' budget.

MISSION

For at least ten years, the mission of the Marine Corps has been in dispute. It has not been credible to define the Corps' mission simply as amphibious landings, with subsequent operations ashore left to the Army; neither the large size of the Corps relative to the Army nor the repeated use of Marines in land campaigns support an exclusively amphibious mission. At the same time, proposals to focus the Marines on Europe have not been acceptable, since such actions would add little to NATO's ground warfare capability while seriously reducing the United States' ability to defend its non-European interests.

Recognition of the need for enhanced U.S. capabilities in non-NATO areas has led to the designation of a so-called Rapid Deployment Force (RDF). It is proposed that instead of the current joint force, the Marine Corps be designated as the Rapid Deployment Force (i.e., that the Marines be assigned primary responsibility for all U.S. ground force actions outside Europe and Korea). Such a mission clarification would imply restructuring the Marine Corps to carry on the campaign ashore in Third World areas largely with its own resources. Assignment of the RDF mission to the Marine Corps would return the Corps to its traditional position as an expeditionary, and not merely an amphibious, force. It would be congruent with increasing national recognition of U.S. vital interests outside Europe.

DOCTRINE

A necessary step in increasing the effectiveness of the Marine Corps is adoption by the Corps of maneuver doctrine. Since Marines

must anticipate being outnumbered in many potential Third World scenarios, the current firepower/attrition doctrine is not attractive. Fortunately, the move toward maneuver doctrine is broadly supported within the Corps and already is well underway.

FORCE STRUCTURE

The structure of the Marine Corps ground forces must be modified to provide enhanced tactical mobility, which is necessary to implement maneuver doctrine. At the same time, the strategic mobility required to perform the RDF mission must be preserved. To this end, the Marine Corps should be restructured around two types of forces: light infantry for difficult terrain and light armor for open terrain. For the former, current Marine heavy infantry must be divested of much of its road-bound logistics and be transformed into a more agile "mountain" infantry. For the latter, a number of Marine foot infantry regiments must be mechanized with a family of light armored vehicles (gun vehicle, personnel carrier, mortar vehicle, air defense vehicle, etc.). Compared to current Marine heavy infantry, the new light infantry should have superior strategic mobility, especially by air. The seaborne strategic mobility of Marine light armored forces would be enhanced both by the light weight and simplicity of the light armored vehicles, and by maritime pre-positioning.

Marine tactical aviation currently includes 12 fighter squadrons, 8 light attack squadrons, and 5 medium all-weather squadrons. The need for Marine fighter aviation is doubtful, since the non-VSTOL Marine fighters do not provide a capability that is not already available from Navy or Air Force aircraft. It is therefore recommended that only three fighter squadrons be retained, all to be equipped with AV-8B+ VSTOL fighters.

All eight light attack squadrons would be retained and equipped with the VSTOL AV-8B. Also, the five medium attack (A-6) squadrons would be retained, since Navy A-6s would not be available once air operations moved ashore and the Air Force lacks sufficient all-weather attack aircraft to support Marine operations.

Marine helicopter aviation would be expanded with both attack and transport helicopters, in numbers consistent with the need for greater tactical mobility.

A final force structure change, consistent with the reduction in fighter aviation, would be a substantial upgrading of ground-based air defenses and transfer of the control of such defenses from the air wing to the ground forces.

MANPOWER

If the Marine Corps is to implement maneuver doctrine, several major changes in manpower policies will be required. They include:

- Increased unit stability for both officers and men. Officer tours, especially command tours, should be lengthened to between three and five years. Unit rotation should be adopted, and the adoption of a regimental system similar to that of the British Army should be carefully considered.

- A professional, long-term-service NCO corps should be created. Achievement of NCO rank should require more than one term of service, and all NCOs should receive thorough schooling.

- Officer education should be restructured to provide greater emphasis on the art of war, through study of military history and theory. Examinations should be required for all promotions.

- The "up-or-out" system should be modified to permit selected officers to have full careers as small unit leaders.

- A reduction in the number and the grade of external billets should be undertaken.

These changes should be accompanied by DoD-wide measures to increase the quality of recruits and to improve retention.

PROCUREMENT AND R&D

The adoption of the RDF mission and maneuver doctrine and the resultant force structure require the following major procurements:

- a family of lightweight armored vehicles;

- a mobile air defense system, comprising both missile and gun weapons;

- new light infantry weapons, including the individual weapon, machine guns and mortars;

- improved CBR defense systems;

- simple, mobile multiple rocket launchers (not the MLRS);

- AV-8B and AV-8B+ aircraft;

- additional CH-53 and attack helicopters, and a new troop-carrying tactical helicopter.

Most or all of the needed procurement items are available off-the-shelf. The greatest need in Marine R&D is not for new programs, but for reform of the R&D process to make it responsive in a timely manner to the needs of the field forces.

STRATEGIC MOBILITY

While the Marine Corps depends almost entirely on other services for strategic mobility, prospective assignment to the Corps of the RDF mission requires brief mention of its strategic mobility needs.

The LSD-41-class amphibious ships should be procured rapidly, and procurement of a new class of amphibious assault ships to replace the current LPH-class should begin no later than FY 1983. The new class (LH-X/VSS) should be procured in two variants, one an amphibious ship, the other a VSTOL carrier for the Navy.

Rapid response with light armored forces will depend on maritime pre-positioning. Sufficient maritime pre-positioning ships should be acquired to permit overseas stationing of the equipment for at least three light armored brigades. Additional fast sealift should also be procured to permit adequate logistics support of the pre-positioned units.

The C-X strategic transport aircraft offers little real utility. However, R&D should begin immediately on a VSTOL strategic transport, which would permit Marines to marry up with their maritime pre-positioned equipment at sea by landing troops on amphibious assault ships accompanying the MPS ships. Such an aircraft should be in service no later than 1990.

These initiatives would provide the Marine Corps with a viable mission and the capability to carry it out. They would also provide the nation with the effective, cohesive Rapid Deployment Force that it currently lacks. In doing so, they would permit the United States to adjust its military posture to the increasing importance of non-NATO problems and opportunities.

5

The Army

Steven L. Canby

The Army is a service in trouble. In the words of its own Chief of Staff, it has become an empty shell. Among the Army's difficulties are:

- The morale and discipline of many units are low.
- The quality of recruits is not satisfactory.
- The training proficiency of many units is low.
- Its ratio of support to combat personnel is the highest of the major armies—it is more than double that of the Soviet Union.
- Replacements (reserves) to sustain the forces in Europe are lacking.
- Its equipment is aging and its rate of modernization is lagging.
- Its officer corps is dispirited.
- Its doctrine and tactical concepts are dated.

It is hard to find much that is encouraging. The problems seem to get worse year by year.

The Army's usual response to its deficiencies is to call for a larger budget. This can solve some problems, but more spending cannot by itself resolve all, or even the more important, dilemmas. Funding will never be limitless and some of the Army's problems—including doctrine and the low ratio of combat to support personnel—are not money issues.

The real problem is within the Army itself. Only the issues of accessions and wartime replacement reserves are beyond its own managerial control. And, as argued in the manpower section of this study, even the first could be controlled by the services acting together.

The Army's many problems appear disparate and unconnected. Indeed, the Army usually approaches them as if they were largely unrelated. In actuality, *all* the problems are interrelated to a greater or lesser extent. The major connecting theme is its style of warfare, especially as reflected in tactical doctrine and the system of providing replacements. The Army's organization and behavior reflect its underlying style of warfare. A different style would beget another organization and different institutional behavior.

There are two basic styles of land warfare: firepower/attrition and maneuver. The Army adheres to a firepower/attrition style. In this style, war is conceived as a contest for a favorable "exchange ratio," on the model of the World War I battle of Verdun. The object is to fight battles, and in those battles to bring firepower to bear on the enemy, causing casualties and destroying equipment. Movement—sometimes mislabelled maneuver—is undertaken to bring firepower to bear advantageously. This style of warfare is expressed in the Army's basic doctrinal manual—FM 100-5, in its heavy emphasis on the single tactic of the withdrawal by ranks (the essence of the Army's "active defense")—and in the Army's emphasis on weapons and other "machines" as decisive elements, rather than operations and tactics.

Most of the Army's current practices and attendant problems derive from its firepower/attrition style of warfare. For example, its rationale for individual replacement derives directly from a firepower/attrition concept: linear warfare with units on-line for protracted periods, administering firepower. In this system, attrition is rendered by firepower "machines." Thus, it is believed desirable to put as many "machines" on-line as possible, replacing personnel casualties as they occur—casualty rates being seen as predictable and low enough to permit the infusion of new personnel into an on-going and experienced organization.

The Army pays several heavy prices for its individual replacement system. The first is the dehumanization of the individual soldier, which produces low unit morale.* Even those armies, such as the

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*Editor's Note:

Historically, the individual replacement system has also meant higher-than-necessary casualty rates during wartime. Studies in the sociology of the military have shown that the phenomenon of male bonding (essentially the comradeship which results from soldiers undergoing together the rigors of training and the dangers of battle) helps to account for unit cohesion under the extreme stresses imposed by sustained ground combat. During recent wars, for example, American units were split fundamentally into two factions by the nature of the individual replacement system—the combat veterans, men who had learned the skills of survival during weeks and months of combat; and the replacements, untested men often sent straight from training to fill gaps in the unit roster caused by battle casualties. The

British Army, which have in the past subscribed to a similar style of war, have embedded the individual soldier tightly into a communal system. The British are famous for their highly cohesive regiments.[1] In the U.S. Army, by contrast, faceless recruits are thrown together in large centralized training camps to be transformed into faceless replacements and distributed randomly throughout the Army. Once in a unit, cohesive bonds are difficult to mold and sustain because of rapid personnel turnover—typically 100 percent annually at the company level. With such a system, poor morale can hardly be unexpected. The British, who also have a volunteer army, currently have a 25 percent annual turnover rate. In the Dutch and German conscript armies, there is no internal churning: individuals are grouped together in company-sized units for their entire period of conscription.

The second price that the Army pays is in training proficiency. Continuity in training cannot be maintained if too many people are entering, leaving, or moving around within the unit. In order to maintain readiness standards under these circumstances, the training pace must then be increased, which is costly in O&M funds and may adversely affect retention rates. By contrast, the British Army, which is widely regarded as well-trained, trains less than the U.S. Army.

The third price is excessive size of organic sustaining assets, a corollary of excessive training. O&M is costly not only in fuel, spares and depot equipment repair, but in the *size* of units themselves. If training were not so demanding, less repair would be needed, making it more attractive to pare maintenance and, in particular, the maintenance organic to the line company and battalion (which in a tank battalion constitutes a fifth of its total strength). In this way, the Army's teeth-to-tail ratio could be marginally improved and (relatively high-quality manpower) spaces freed for manning "teeth" elements.

These costs are the result of the Army's style of warfare. They are justified on the grounds of (narrowly defined) cost-effectiveness and training readiness. In the case of the latter, it is argued that new units first days of combat are crucial to the long-term survival of the new men in such units. If the replacements can stay alive long enough to learn the tricks of infantry fighting, they stand a good chance of living through the war. The problem, however, is in staying alive those first crucial days. Because the veterans of these wars tended to associate primarily with their fellows, who had shared the same battle experiences, they felt little kinship to the new men. Thus, the replacements were rarely shepherded by the experienced troops (who had time only to look out for each other) and in many cases were handed the riskiest combat assignments. The result of this situation was that in day-to-day fighting, replacement troops garnered the bulk of unit casualties—casualties that would have been reduced if the men initially had been looked after by their more experienced comrades.

are less operational, thereby reducing the Army's overall readiness. What this argument neglects is the fact that some units would be more operationally ready and the Army as a whole could have *more* units. The Army's current thinking reflects a style of warfare calling for homogenous units and for "firepower machines" on-line, as opposed to the foreign concept of thrust vectors led by high-quality "cutting edge" formations and followed by lower quality space-consolidating units.[2]

The U.S. Army's style of combat calls for large combat companies capable of absorbing casualties. Its battalions and divisions have been further enlarged with built-in logistical assets for self-sustaining support. Armies with a maneuver style of warfare (such as the German and Soviet) are by contrast designed for impact: many small combat units are amalgamated into large numbers of lean divisions for swamping and enveloping an opponent in an intense, but short, campaign. Forces are fought in thrust vectors for operations *beyond the battlefield,* with reserves echeloned in train to exploit developing opportunities. The objective in maneuver warfare is to collapse the opponent's organizational integrity, not to seek his cumulative physical destruction.

A maneuver style of war calls for an entirely different organization. War is no longer an output of firepower "machines." The object is to exploit opportunities by fluid maneuver, either by sensing enemy mistakes or by setting the enemy up to make mistakes. The emphasis is on organizing a firepower and logistic *framework* within which large numbers of combat units can operate in response to rapidly developing threats and opportunities. The desirable characteristics of staying power and sustainability are now transferred from individual units to the army as a whole.

Combat units can be stripped of much of their sustaining capability. In the process of thinning, spaces and funding will be released for forming more combat units. Once there are more units, unit replacement becomes more attractive. Once this principle is accepted for wartime, compatible peacetime practices are acceptable.

Unit replacement offers a number of benefits. The first benefit is an increase in unit morale and unit cohesiveness. The second is higher standards of operational readiness with reduced O&M costs. A third is a potential doubling of the teeth-to-tail ratio. A fourth benefit, following from the third, is that *more* divisions can be formed with the same manpower level and those formed can be fully manned. An army of 750,000 with a maneuver style of warfare should be capable of fully manning 25 divisions or, alternatively, structuring even more divisions and cadreing some at various strengths for rapid expansion upon mobilization (which is the Soviet practice). A cadre

system offers a way to mesh with the National Guard and Army Reserves, making them militarily more useful.

A shift to a maneuver style of warfare offers benefits beyond those emanating from a unit replacement system. In terms of tactics, it offers more agile units and a major improvement in effectiveness. In terms of equipment, maneuver warfare shifts the emphasis in modernization from "quality" to quantity. The Army will need more equipment for its larger number of combat units, but the equipment need no longer be geared to the hyper-expensive sensor, data processing and firepower delivery triad currently emphasized by the Army and the Department of Defense. Equipment can be smaller (with a reduced signature) and less sophisticated, reducing unit investment and O&M costs, while the equipment for those "tail" formations now rendered redundant can be eliminated.

Finally, while there are many reasons for the unease in the officer corps, one of the major contributors is the scarcity of units to command and the competition (with numerous ill-effects) that this engenders. The pool of officers that is needed for rapid mobilization can now be seconded directly to units rather than "housed" in large staffs, which over the years have generated a life of their own, with increasing demands for reports from subordinate units.

The Army is a service in trouble, but its troubles are largely of its own making. The Army is an institution which has for too long operated according to its own inner rules. Its management has become fragmented and incapable of synthesizing its many components. It has not recognized changing external factors and the new opportunities inherent in them. It has saddled itself with an outdated firepower/attrition style of warfare, and continues to be burdened by the problems which that warfare style creates.

More funding alone cannot make the Army healthy again. Only a basic change in style of warfare and derivative changes in its structure and organization can bring genuine renewal. The potential clearly is there. The question is when the process of change will begin.

Footnotes

1. The Army has recently announced some initial moves in this direction, including the possibility of adopting some of the substance of the British regimental system. (Editor's Comment: On September 5, 1980, Army Chief of Staff Edward Meyer announced that the Army intended to develop a test plan to rotate entire companies of soldiers as an alternative to individual replacement and that the Army would examine both deployment and rotation by battalion and brigade and a regimental system which would permit long-term attachment to units.)
2. One argument, sometimes voiced, against adoption of such a style of warfare is that command of lower quality "consolidation" units would be harmful to the officers' careers.

6

Land-Based Tactical Aviation

Pierre M. Sprey

CURRENT TAC AIR PROBLEMS

Force Size

We are currently spending more for fighter (both land and sea-based) investment than in any previous peacetime period: about $12 billion per year as compared to $6 billion in the mid-fifties in constant FY 80 dollars. Despite this, we are buying only one-seventh as many fighters as in the mid-fifties—400 per year today versus 3,000 then. U.S. fighter forces[1] have shrunk from 18,000 to 7,000 over the same period and would have shrunk far more if the Services had not grossly underfunded operating expenses and stretched the operational life of their fighters to 20+ years.

Readiness

Our first line land-based fighter, the Air Force's F-15, is currently ready (fully mission capable) about 35 percent of the time. Deploying a squadron of them usually requires stripping 2 or 3 other squadrons of their spares and test equipment. In fact, in a 1980 inspection, the USAF's prestigious 1st Fighter Wing (F-15s) was found incapable of deploying with *3 weeks of prior notice.*

The radar early warning aircraft which is intended to control these fighters, the E-3 AWACS, shows only about 15 percent readiness. And our tactical all-weather bomber, the F-111 is only slightly more ready. The only Air Force tactical aircraft in current inventory which approaches 70 percent readiness is the A-10, our least complex attack jet.

In the even more important area of personnel readiness, our pilots are averaging about one-third as many flights per month as Israeli pilots average. It is widely known that both pilots and maintenance crews in the air reserves and Air National Guard are noticeably superior to those in the regular forces. Retention of active fighter pilots has dropped to an all-time low, primarily because of inadequate flying time and lack of confidence in Service leadership and only secondarily because of low pay.[2] The retention of skilled maintenance NCOs, though less publicized, is in an even more critical state.

Force Effectiveness: Air-to-Air

Judging by the lessons of the Vietnam and the Yom Kippur Wars—as opposed to the promises of computer analysis—our tactical air forces have never been less effective. In Korea, against an Oriental air force with little combat experience, our first line F-86 fighters achieved a 10:1 exchange ratio against the MIG-15. In Vietnam, against a much smaller Oriental air force with no combat experience, our first line F-4 could achieve little better than a 2:1 edge over the MIG-21. Why did we do so much worse in Vietnam? There are three principal reasons: inadequate pilot training; the ease with which MIGs could find and surprise the large, highly visible F-4; and the less than 10 percent kill rate of the Sparrow radar missile around which the F-4 had been designed.

Have these deficiencies been cured? Today, our pilots receive almost half the flying training time they had before and during Vietnam. The F-15 is even larger and more visible than the F-4. It is so large because it was designed to be dependent on radar missiles which are not likely to be more effective than those used in Vietnam. And, of course, since the F-15 costs 3 to 4 times more to buy than the F-4—and can fly only one-half to two-thirds as often—there will be far fewer of them in the air to oppose the enemy.

Force Effectiveness: Air-to-Ground

The U.S. and its NATO allies spend $85 billion per year on procurement and operation of land-based tactical air forces. It is reasonable to ask what the resulting air forces can contribute to stopping 75 or more Warsaw Pact divisions in a Central European onslaught. The answer is that NATO's $85 billion buys two main air capabilities:

- 3000 multi-purpose, high-speed jets suited mainly for bombing Poland and Czechoslovakia in much the same way that we bombed North Vietnam—a capability that would have little effect, and certainly no immediate one, on Red armored spearheads thrusting deep into West Germany.

- 300 deployed attack aircraft maneuverable enough to find tanks and carrying a weapon lethal enough to kill tanks (i.e., A-10s with the 30mm cannon)—a force much too small to affect the outcome of the land battle.

The same lack of effectiveness against hard-to-find, fleeting ground force targets can be expected if we attempt to use USN and USAF tactical air in the Middle East or elsewhere in the Third World.

WHAT HAS LED TO THE CURRENT TAC AIR PREDICAMENT?

To shape a course of action that will lead to practical improvements, it is first necessary to understand the underlying causes of the present state of affairs. Among the many candidates, five factors appear to have played a crucial role in the last 20 years of deterioration in tactical air effectiveness:

- The absence of new concepts of air power (in either the USAF or the USN) to replace the attrition warfare/interdiction bombing approach that failed in Korea and Vietnam.

- Twenty years of overemphasis on R&D and procurement at the expense of training, readiness and combat-oriented leadership.

- Since 1960, diversion of a large fraction of the tac air budgets to complex night/all-weather electronic systems of highly questionable capability.

- Increasing centralization via proliferating management systems, computerized C^3 and intelligence, and automated "battle management" radar systems, resulting in slower response, rigid and predictable tactics, decay of tactical innovation, and rapid decline in morale of combat-oriented pilots and crews.

- An unwillingness to foster *independent* testing and to use it to cancel ineffective programs.

More money will not alone cure our tac air problems. Indeed, unless the ways in which we spend money change, more spending will merely exacerbate current problems. More funding is, however, required in some areas, especially operations and maintenance.

The basic causes of current tac air deficiencies, which have strong institutional roots, must be dealt with. Independent testing organizations must be established within the Department of Defense. New concepts for employing tac air in other than an attrition/deep interdiction mode must be developed. *All* new fighter and attack aircraft programs should incorporate a competitive fly-off/shoot-off. In addition, the five-year programming and zero-based budgeting systems, along with OMB directive A-109, should be re-evaluated and possibly eliminated.

However, while the necessary institutional changes are underway, concrete steps must be taken to improve tac air capabilities.

In terms of available systems:

- Procurement of the F-16 should be emphasized over the F-15. In visual combat, the F-16 has been demonstrated to be the superior aircraft. The poor performance of the Sparrow missile and lack of solution to the IFF (Identification Friend or Foe) problem render the beyond-visual-range mission highly questionable. The F-16 should be continued in production until the "super-cruise" fighter (discussed below) has been developed.

- The A-10 should be continued in production until the combined arms fighter (discussed below) is ready to replace it.

A number of new R&D programs should be initiated to make the more fundamental changes needed in tac air.

WHAT SHOULD BE DONE?

The following programs are intended to foster major increases in tactical air effectiveness at sharply reduced unit cost (in both dollars *and* manpower).

Aircraft

- *Combined arms fighter*—to form the backbone of a new and badly needed tac air capability—that can be thought of as a highly lethal, aerial anti-tank cannon. A minimum of 2000 of these aircraft (U.S. plus Allied) would operate as a major combat arm combined integrally with blitzkrieg ground tactics. The aircraft should be the smallest, most maneuverable fighter possible, wrapped around the four-barrel 30mm cannon.[3] Speed should be no more than 400 knots; acceleration should be double that of the A-10, together with a 50 percent maximum *g* advantage. Cost should be under $2 million in FY 81 dollars, weight under 7500 pounds.

- *Supercruise fighter*—a single purpose air-to-air fighter designed to maximize surprise, the decisive factor in 80 percent of air kills. It would be intended to cruise at Mach 1.3 to 1.6, instead of the Mach .8 to .9 of every current tactical fighter. To enhance the surprise achieved by superior cruise speed, basic avionics and weapons would be non-emitting and the aircraft's size would be held to less than that of the F-5. Such a fighter would render every existing fighter obsolete in much the same way that the ME 262 jet made all prop fighters obsolete in 1945. The cost would be under $5 million in FY 81 dollars. The weight would be less than 10,000 pounds.

Weapons

- *Air-to-air gun*—the current U.S. F-14/F-15/F-16 gun uses a 1942 round that is the least effective 20mm round in the world. A new gun and round could increase the effective gun firing envelope by at least 50 percent while increasing individual round lethality and cutting gun and ammo weight and cost by a factor of three.

- *Air-to-air anti-radiation missile* (ARM)—because a fighter radar is a perfect, *self-identifying* beacon for a missile to home on, the deployment of an air-to-air ARM, would eliminate the use of radars in air combat. Because the enemy's radar solves the IFF problem, this missile would be the only true BVR (beyond visual range) missile available. The missile would be Sidewinder-sized with only earphones (for lock-on tone) needed as fire control. The cost, via competitive development *and* competitive, two-source procurement, could be held to under $20,000 in view of inherent simplicity of radar-homing guidance.

- *Snapshoot passive air-to-air missile*—possibly a Sidewinder variant, intended to permit locking on and firing in equal or less time than required by a gun. Other major emphases would be on look-down ability (i.e., ability to discriminate against ground and sky IR (Infra Red) clutter) and resistance to *combined* flare/maneuver countermeasures. The emphasis on look-down ability conflicts with the sensitivity required for head-on capability. Since look-down is more important, the head-on requirement is eliminated. Cost should be under $15,000.

- *Improved air-to-ground cannon*—although the GAU-8 30mm has unprecendented anti-tank lethality, it would be prudent to start work on a new cannon of larger caliber and/or higher velocity in order to be prepared if the side and rear armor of Soviet tanks increase. If this cannon shows much improved effects against infantry targets, machine gun nests and other field fortifications, it would be well-justified even without an increased thickness in Soviet armor. The NATO 35mm round appears to be a logical candidate to start with.

Components

- *Supercruise engine*--a competitive engine program is needed immediately to permit supercruise aircraft prototype initiation in 2 years. Because optimization for supersonic cruise fortunately requires more ramjet-like engines, the supercruise engine would be much simpler and a lower risk than the high cost, trouble-ridden TF-30, F-100, F-101 or F-404.

- *Simple air-to-air radar warning receiver*—this is needed as the single most important avionics item on the supercruise (or any) air-to-air fighter. Key characteristics are: a) reliable discrimination between enemy fighter radars and *all* other friendly and enemy emitters and b) reliable indication of which aircraft in a formation has been locked onto.

- *Short-squirt radar with passive angle-tracking*—it would be useful to have a simple radar to do wide-band *passive* angle-tracking on an enemy fighter radar located by the above-mentioned warning receiver and occasionally to take a short-burst range reading on the target in order to decide whether to launch an air-to-air ARM or other missile. The short burst minimizes the chance of alerting the enemy's radar warning receiver and thereby sacrificing the all-important surprise attack. DoD lags behind the nation's police in this obvious radar ECCM technique; the police are already using short burst radars to foil "fuzzbusters."

- *Reinforced composite materials aircraft*—despite the hundreds of millions DoD has poured into boron and graphite composite structure research and fabrication, we have yet to build our first all composite man-rated airplane. In the meanwhile, the "backyard" aircraft builders (such as Bert Rutan, the noted kit designer) have built dozens of successful aircraft entirely of fiberglas-over-foam construction. We need some DoD prototypes using this innovative, extraordinarily low cost approach—which provides "stealth" (passive ECM qualities) without the weight and heavy aerodynamic penalties of our recently advertised high technology approach to "stealth."

Footnotes

1. Inventory of fighters, attack and recce for USAF, USN and all reserve components; official DoD inventory counts used.
2. Note that complaints about pay increase sharply as job satisfaction and confidence in leadership deteriorate.
3. The 30mm cannon has already demonstrated unprecedented accuracy and destructive effects on tanks. Its lethality against a wide spectrum of targets from trucks and artillery to landing craft and missile fast boats should be even more impressive.

Selected Bibliography

Boyd, John. "Patterns of Conflict." February 1979 (and updated regularly), unpublished.

Canby, Steven L. *A Comparative Assessment of the NATO Corps Battle.* C&L Associates, November 1978.

_____. "General Purpose Forces." *International Security Review,* 5 (Fall 1980).

_____. *Military Manpower Procurement: A Policy Analysis.* Lexington, Mass.: D.C. Heath, 1972.

_____. "U.S. Defense Policy: The Problem Is Not More Money." *AEI Foreign Policy and Defense Review,* 1 (No. 3).

_____ and Butler, Robert A. "The Military Manpower Question." In (National Strategy Information Center, Inc.) *Arms, Men And Military Budgets: Issues for Fiscal Year 1977.* Edited by William Schneider, Jr. and Francis P. Hoeber. New York: Crane, Russak & Company, Inc., 1976.

Fallows, James. "Muscle-Bound Superpower: The State of America's Defense." *The Atlantic Monthly,* October 1979.

_____. "The Civilianization Of The Army." *The Atlantic Monthly,* April 1981.

Hart, Gary. "Statement By Senator Gary Hart, D-Colo. FY81 Defense Authorization." July 1, 1980.

_____. "The Case for Military Reform." *The Wall Street Journal,* January 23, 1981.

Kondracke, Morton. "Defense Without Mirrors." *The New Republic,* January 24, 1981.

Lind, William S. "Bureaucratic Tactics." *Air University Review,* January-February 1980.

_____. "Defining Maneuver Warfare for the Marine Corps." *Marine Corps Gazette,* 64 (March 1980).

_____. "Military Doctrine, Force Structure, And The Defense Decision-Making Process." *Air University Review,* May-June 1979.

_____, and Record, Jeffrey. "Twilight for the Corps?" *United States Naval Institute Proceedings,* 104 (July 1978).

Luttwak, Edward N. "A critical view of the U.S. military establishment." *Forbes,* May 26, 1980.

_____. "A New Arms Race?" *Commentary,* September 1980.

_____. "On The Meaning Of Strategy . . . For The United States In The 1980s." Speech delivered on March 18, 1980 to the *Defense Strategy Forum* of the National Strategy Information Center, Washington, D.C. Printed for private circulation only.

_____. "The American Style of Warfare and the Military Balance." *Survival,* 21 (March/April 1979).

Merritt, J.N. and Sprey, P.M. "Quality, Quantity or Training." *USAF Fighter Weapons Review,* Summer 1974.

Mossberg, Walter S. "Are Pentagon's Planes, Ships, Tanks Getting Too Complex." *The Wall Street Journal,* March 13, 1981.

Polmar, Norman. *The Ships and Aircraft of the U.S. Fleet.* 12th ed. Annapolis: United States Naval Institute, 1981.

_____ and Bessette, Ray. "General Purpose Forces: Navy and Marine Corps." In (National Strategy Information Center, Inc.) *Arms, Men And Military Budgets: Issues for Fiscal Year 1981.* Edited by Francis P. Hoeber, William Schneider, Jr., Norman Polmar and Ray Bessette. New Brunswick, N.J.: Transaction Books, 1980.

Spinney, Franklin C. *Defense Facts Of Life.* December 5, 1980, unpublished.

Woolsey, R. James. "A New Kind Of Reform." *The Washington Post,* March 13, 1981.

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Critical Issues

Reforming the Military

The start of a new, avowedly conservative, presidential administration is a propitious time for the supporters of a strong national defense to re-examine the basic principles that are guiding the accumulation and maintenance of our military strength. For a number of years now, we have been hearing about the general decline in the effectiveness of our general purpose forces—the dramatic increase in the Army's recruitment of marginally-qualified and unqualified (Category Three and Category Four) personnel, the Navy's continuing loss to civilian life of mid-career officers and petty officers with specialized skills, the ever decreasing numbers of fielded aircraft, ships and tanks with which to fight, and the overall downturn in military readiness.

The Reagan Administration has pledged to restore our defense posture to its former strength. Unfortunately, given the huge disparity that has been evident between Soviet and United States defense investment over the past decade, the Administration's newly promised increases will provide nowhere near the amount of money required to restore the U.S. general purpose forces, as currently constituted, to adequate strength.

The papers in this volume propose an alternative solution to this problem. They suggest that a general restructuring of our military forces, coupled with a rethinking of our strategy and tactics will provide the requisite strength without the need for major defense funding increases. The authors share a common belief that the United States must build a genuine framework for the employment of its military forces—a framework that includes not only a realistic national strategy to which it can size its forces, but also a body of military tactics for each Service that is based upon a careful, continuing study of military history and of the lessons provided by recent combat experiences.

The idea presented in these papers are controversial, to be sure. Some may prove impossible to implement. Nevertheless, it is hoped that they will contribute to the debate on this vital issue.

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