AIRPOWER JOURNAL

Summer 1990

AIRPOWER JOURNAL

Summer 1990, Vol. IV, No. 2 AFRP 50–2

EDITORIAL

Scoping the Game

A barrage of news, editorials, and commentaries in the press has made us aware of the dramatic changes occurring in Eastern Europe and the Soviet Union. Pundits predict that these changes will have a varying impact, depending on one's point of view, on the global strategies and military force structure of the United States. Valid arguments abound over doctrines, threats, strategies, the most effective weapons systems, and the resultant force structure. This is interesting grist for the professional and bureaucratic mills, but it will likely be some time before decision makers resolve these matters. At this point, we can assume that these changes and economic realities almost certainly will cause reductions in the US military force structure and that fewer of us will be around to argue about and man the resulting forces. This does make things a bit more personal; at the least, we can generate some immediate interest in the question of just who these "fewer" might be.

Recently, an article in these pages reminded us that success is a societally defined accomplishment. It cautioned that societies, oddly enough, tend to assess people and their potential in a social context—nothing really revelatory. After all, this lesson is nothing more than a broader application of what is fondly known as situational awareness. Perhaps we should bear in mind that success, in and of itself, has little meaning outside its societal context. Being promoted is neither important nor the mark of success; rather, accomplishing something by being promoted is what counts. Thus, military professionals must remember that, after all, their careers have a social purpose and aspect.

Currently, a popular analogy for the business of the Air Force is that of the professional football team. We expect our players to concentrate on being experts—that's why they are "hired." There are other parallels between the leadership structures of both organizations. These comparisons have some validity, but consider the differences. A pro team recruits its people from among the best it can get, including those from other teams. Society, though, takes a dim view of military professionals who act as free agents and hire on with the highest bidder. The Air Force must grow its own first-string players, as well as trainers, coaches, and general managers. Given the professional requirement for its junior, middle, and senior management to have actually played the game, it is unlikely that the Air Force will rely on external hires to guide the development and employment of its combat capability. The military person who understands these requirements hardly needs to be told that players of all sorts form the pool from which the Air Force will draw even its junior management personnel. In contrast, only a highly optimistic linebacker or quarterback would expect a 20-year football career "on the line."

Noting that there may well be fewer of us in the future and that the myriad functions necessary to a modern military force will not decrease in variety, we may not be able to lock ourselves into single-specialty tracks. It seems reasonable to presume that the most professionally educated and functionally versatile of our people will also be our most valuable. Does this mean that real warriors face a bleak future? Absolutely not! *Warrior* is a state of mind, not a specialty. It requires a drive to prevail, an awareness of situation, an intellectual flexibility, and an appreciation of the broader purposes and tenets of the military profession. Those who are able to carry that state of mind into whatever assignments may present themselves are likely to be the military professionals on whom we rely to take us into the twenty-first century. KWG

ricochets

Letters to the editor are encouraged. All correspondence should be addressed to the Editor, Airpower Journal, Walker Hall, Bldg 1400, Maxwell AFB AL 36112-5532. We reserve the right to edit the material for overall length.

MISIDENTIFIED TARGET

Some sharp-eyed readers of Col William R. Carter's "Air Power in the Battle of the Bulge" in our Winter 1989 issue noted that we misidentified a destroyed German tank as a Mark IV when, in fact, it was a Mark V. We can only hope that all our close air support pilots are equally well versed in the identification of modern enemy armor! Thanks for the correction.

KUDOS FOR PME

Lt Col Richard L. Davis's article on "The Case for Officer Professional Military Education" (Winter 1989) was outstanding. It showed much thought and research on the topic. The value of its insights is immeasurable to the professional Air Force. My compliments to Colonel Davis on a fine article.

SrA George G. DiMichele
Clemens, Michigan

COUNTERINSURGENCY SUPPORT ON TARGET

My compliments to Maj Richard D. Newton for his insightful article entitled "A US Air Force Role in Counterinsurgency Support" in your Fall 1989 issue. His article is, perhaps, one of the most important recently published in the *Airpower Journal*.

My operational experience (1985–89) as operations officer and commander of the 1st Special Operations Squadron (SOS) completely supports his assertion that today's Air Force "lacks the ability to train and educate our allies to employ [counterinsurgency weapons]." The 1st SOS spent a considerable amount of time on TDY to Thailand and the Republic of Korea (ROK) working with their respective special operations forces (SOF). While their land and naval SOF are among the most capable in the world, effective air employment of them by the host nation is severely hampered for the reasons cited in Major Newton's article. The 1st SOS lacked the requisite language skills, assets, and—most importantly—the operational directive to adequately train its Thai air force and ROK air force counterparts in air employment of SOF. Thus, totally effective air employment of their land and naval SOF pivots largely upon a high degree of US Air Force SOF integration (even direct intervention) during a crisis.

With the recent political events in Eastern Europe reducing the threat of large-scale conventional war, USAF's low-intensity conflict capability will become an even more important cornerstone of our nation's war-fighting strategy. As such, it would behoove USAF's senior leadership to take serious note of the issues and proposals presented by Major Newton.

Lt Col Thomas J. Doherty, USAF, Retired
Fort Walton Beach, Florida

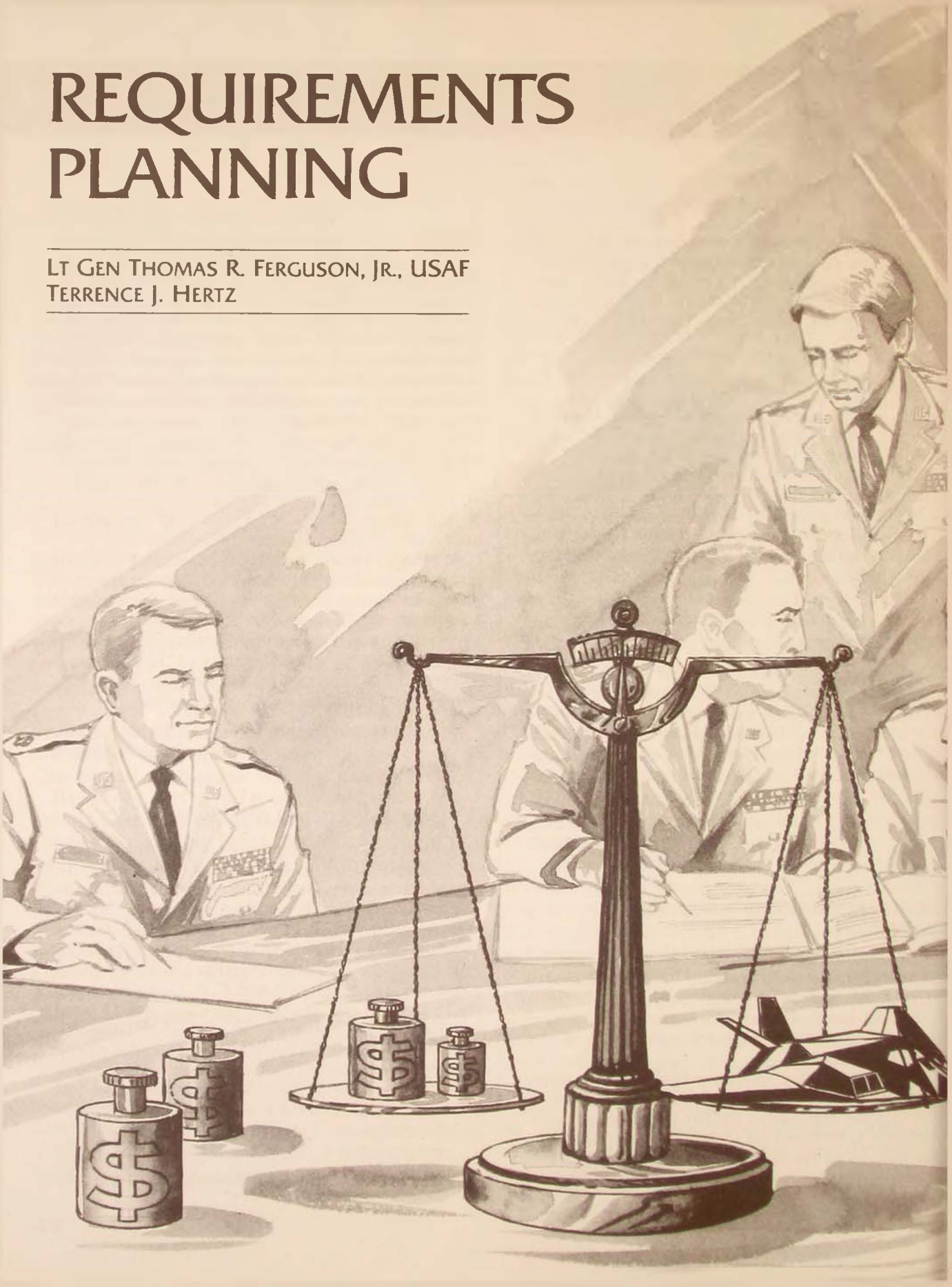
A FINAL SHOT AT CLAUSEWITZ

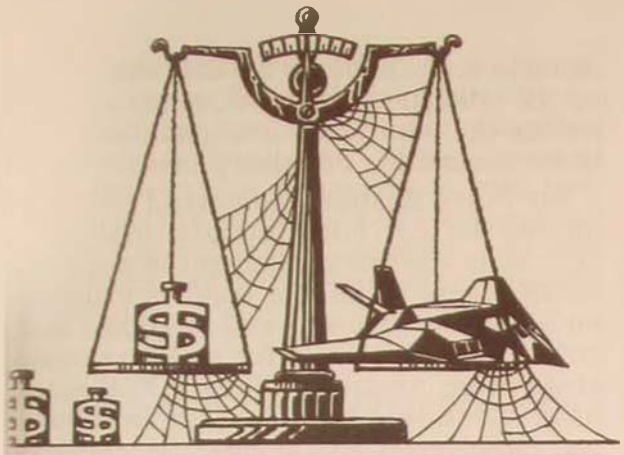
I see that my letter in the Summer 1989 *Airpower Journal* in response to Capt Kenneth L. Davison's article ("Clausewitz and the Indirect Approach: Misreading the Master," Winter 1988) has elicited two "ricochets" in the Winter 1989 issue. One is by Captain Davison and the other by Lt Col Phillip Meilinger, who claims I have substituted J. F. C. Fuller, the British military analyst, for Clausewitz as a master and an icon. But in my letter I merely pointed out that Fuller had made some sharp observations about Clausewitz's shortcomings as an interpreter of Napoleon. I never intended to replace Clausewitz with Fuller as an object of veneration.

Joseph Forbes
Pittsburgh, Pennsylvania

REQUIREMENTS PLANNING

LT GEN THOMAS R. FERGUSON, JR., USAF
TERRENCE J. HERTZ





The current approach to identifying military requirements has the appearance of a pot simmering on the back burner: it works well with experienced chefs—those who know the recipe—but the chefs (the decision makers) change often. As the decision makers change, so changes the perception of the requirement, the threat, and other factors as well, resulting in frequent modifications in funding, schedule, and requirements. The latter changes, in turn, lead to additional problems associated with increased oversight. James A. Winnefeld notes that although the "acquisition process carries the burdens of earlier ... failures [one area in which] the acquisition process and its practitioners have themselves to blame [is] the specification of requirements."[1]

Prior to any discussion of requirements planning, one must decide upon a definition of the term. Unfortunately, *requirements* has many meanings in the field of defense acquisition. Col Alexander P. Shine notes a problem of semantics in the Department of Defense (DOD) bureaucratese: "*Requirement* [italics added] can mean anything from 'something we are quite confident we really have to have in order to ensure battlefield success' to 'something we sure would like to have if no one would fuss too much about it.'"[2] According to Glenn A. Kent, the only legitimate use of the word is to "say that we have a requirement to increase our capability to achieve some operational objective."[3] Further, he notes that "the requirements process centers on actions by the Chairman of the JCS [Joint Chiefs of Staff] in conferring on, evaluating, advising on, and recommending *operational* requirements."[4]

Kent described the macrolevel view of requirements. A microlevel, or weapon-system, view of requirements also exists. To paraphrase a comment by Gen Larry D. Welch, Air Force chief of staff, "We tend to use the word *requirement* too loosely. We start with a need—the unconstrained requirement—and then begin a refinement process seeking trade-offs—looking for the optimum solution—taking cost, schedule, and performance into account. The first time *Requirement* (with a capital R) should be used is after the trade-off process is complete. That's not earlier than full-scale development."[5]

The definition of *requirement* depends on where one is in the requirements planning process. Requirements planning begins with an examination of the operational need. It continues as weapon-system alternatives are evaluated according to how well they allow us to fulfill operational requirements. Finally, requirements planning makes trades in performance (including reliability and maintainability), cost, and schedule to determine the optimum system specification. The result of this process is a *system* requirement.

The fluctuation of requirements at both the operational and system levels is among the recurring themes of several studies that identified problems with defense acquisition. The report by the President's Blue Ribbon Commission on Defense Management, also called the Packard commission, outlines fundamental problems associated with establishing requirements: (1) setting requirements at the national level, (2) estimating costs and schedules, (3) resolving changes in program (system) requirements, and (4) increasing the incentives to reduce program costs.[6] In his approach to defense planning, called "strategies to tasks," Kent correctly points out that a systematic approach to a focused national strategy is the first step.[7] Correcting the fundamental

problems does require a focused national strategy, but those of us in requirements planning can remove some of the difficulties by working the requirements process more systematically.

The purpose of this article is to explore the requirements process—the current practice and problems associated with it—and present a proposal for improvement. This proposal is based on the recommendations of Secretary of Defense Richard B. Cheney in his response to National Security Review 11 in 1989.[8] Because its foundation is sound, we suggest only modest changes to the current process. Our most significant change is philosophical, insofar as we add an element that is currently lacking, for the most part. That is discipline—knowing where one is in the acquisition cycle and working the appropriate pieces in turn. This requires making the correct decision at the correct milestone and sticking by that decision. By adding discipline, we improve the data that backs up the rationale for each milestone and we reduce the—at times—irrational behavior of the acquisition decision process.

Air Force Systems Command (AFSC), one of the Air Force acquisition commands, is a major participant in requirements planning. Its role requires focusing on high-priority needs and missions, and anticipating the need for major system-acquisition programs. Thus, AFSC must have an understanding of the problems and deficiencies which affect the capabilities of the major commands. Of course, requirements planning involves other entities than AFSC: the Air Staff, industry, and requirements planners from other major commands also contribute. Hence, discipline demands that all participants know their roles and know how they interact with other participants. The emergence of a need begins a constant, continual dialogue among these participants, which

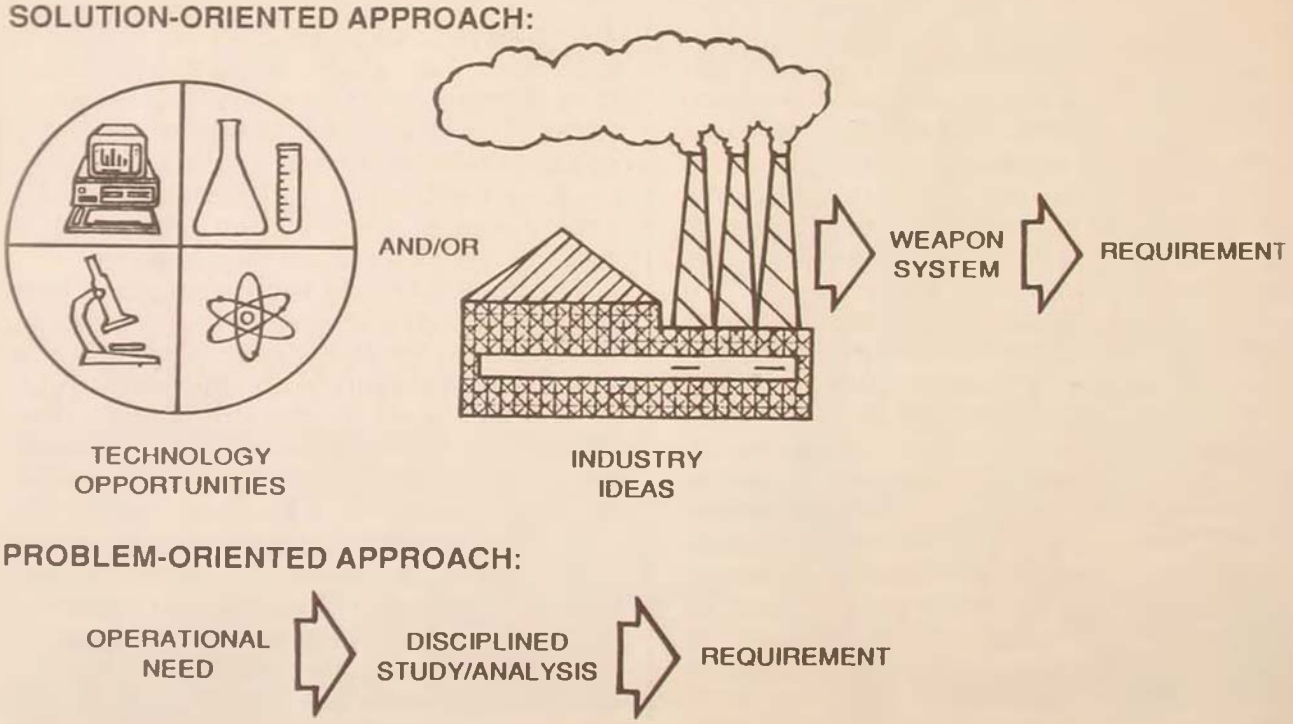


Figure 1. What Comes First . . . Solution or Problem?

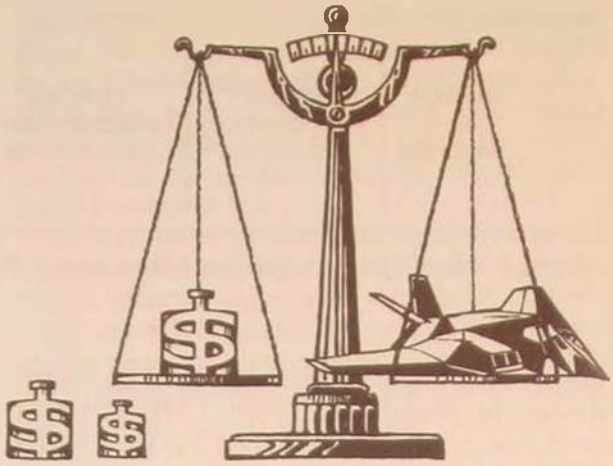
will carry through the life of each acquisition program. The dialogue begins by establishing the best possible understanding of what Air Force commanders are most concerned about. It continues with pinpointing the problem and bringing together the technologist, planner, and user to jointly examine ways of solving the problem.

Evolution of a Requirement

Requirements originate from many sources but usually derive from a deficiency. We document or convince ourselves of a deficiency in different ways. It can take the form of (1) a validated threat or capability, (2) an operational inadequacy in existing equipment, (3) a high consumption of resources (i.e., poor cost-effectiveness), or (4) an opportunity to exploit new technology or an enemy weakness. The identification of the deficiency may come from the user by way of commanders' studies or war-game exercises, from mission area analyses and threat assessments, or from an assessment of an older system's inability to meet its mission.

The requirements process may take one of two approaches to meet a user's need: a solution-oriented approach or a problem-oriented approach (fig. 1). The solution-oriented approach is one in which a technological opportunity exists. That is, a laboratory or industry sponsor presents the user with a technology that significantly increases capability. The user then identifies a requirement based on this technological opportunity. In this approach, often called "technology push," the solution is well understood.

The converse of technology push is "requirements pull," the problem-oriented approach. It arises from any source when a deficiency or problem is known but the solution is unclear. Identification of the deficiency entails an analysis that fully explores the deficiency, identifies potential solutions, and assesses technologies that require maturation. The problem-oriented



approach is the classic milestone path for acquisitions.

The Acquisition Process Today

The responsibilities of the acquisition commands are outlined in DOD Directive (DODD) 5000.1, *Major and Non-Major Defense Acquisition Programs*, and DOD Instruction (DODI) 5000.2, *Defense Acquisition Program Procedures*.[9] These documents are "first and second, respectively, in order of precedence for providing policies and procedures and managing major defense acquisition programs."[10]

A major acquisition program requires a program decision package and a mission need statement if it is to compete for funding (the former is required if the program is to be funded by the Air Force budget).[11] The program decision package is an Air Force decision document that describes the program or an independent portion of it—together with proposed alternatives—in terms of necessary resources.[12] The mission need statement is required when a major defense acquisition program is expected to exceed dollar thresholds established in DODD 5000.1: $200 million in total expenditures for research, development, testing, and evaluation or $1 billion in eventual total expenditures for procure-

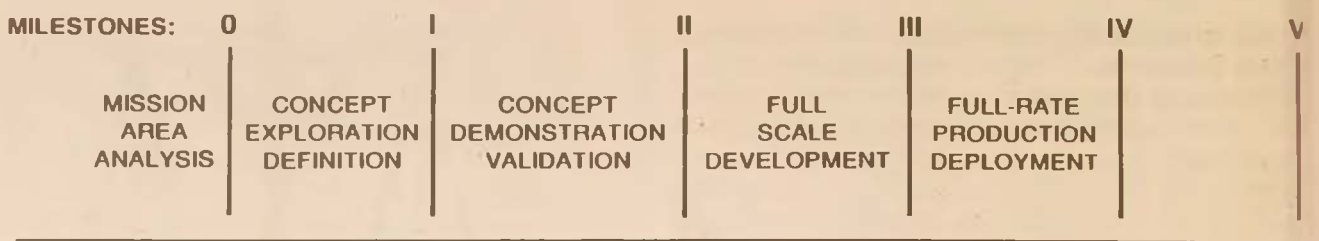


Figure 2. Major System Acquisition Milestones and Phases.

ment (both figures are based on constant dollars for fiscal year 1980).[13] Mission area analysis conducted by the various DOD components provides a basis for this three-page document that identifies the mission and threat; known alternatives to be considered during concept exploration/definition; affordability and sufficiency of funding over the Five Year Defense Program (FYDP); and acquisition strategy.

The program decision package and mission need statement form the basis for a program decision/mission need decision, which is milestone 0.[14] The major system-acquisition milestones and phases (fig. 2) are outlined in DODD 5000.1.[15] The milestone 0 decision determines mission need and approves program initiation and authority to budget for a new major program. Considerations include affordability and life-cycle costs, modification to an existing US or allied system to provide needed capability, and assessment of operational utility.

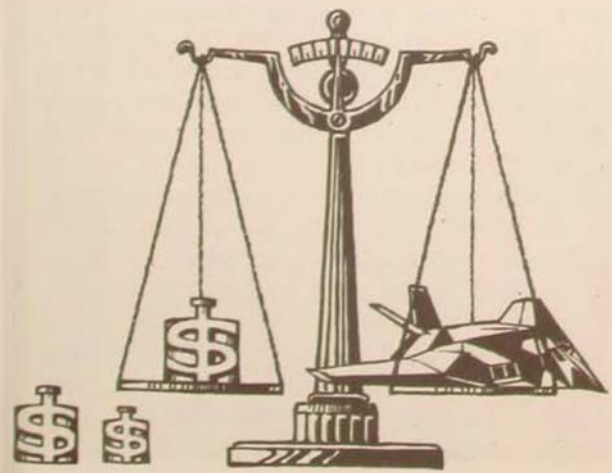
Normally, a concept exploration/definition phase follows this approval. The information required to make the next milestone decision includes (1) program-alternative trade-offs; (2) performance, cost, and schedule trade-offs, which include evaluating the need for a new development program versus buying or adapting existing US or allied military or commercial systems; (3) appropriateness of the acquisition strategy; (4) prototyping of the system or selected system components; (5) affordability and life-cycle costs; (6) potential common-use solutions; and (7) cooperative development opportunities. During this phase, experiments and technology demonstrations are often performed to determine if proposed alternatives are really feasible.

Of the documents to be prepared during concept exploration/definition to support the next milestone, the most significant are the system concept paper and the cost and operational effectiveness analysis (COEA) report. The system concept paper summarizes the results of the concept exploration/definition phase; describes the DOD component's acquisition strategy, including identification of the best concepts to be carried into the concept demonstration/validation phase and reasons for eliminating alternative concepts; and establishes broad goals and thresholds for program cost, schedule, and operational effectiveness and suitability, to be reviewed at the next milestone.[16] The COEA report assesses the operational effectiveness and suitability of proposed concepts in the context of the specific tasks addressed in the DOD component's mission area analysis. Alternative approaches and some indication of the cost-effectiveness of the recommended approach are specifically required.[17]

Milestone I, the concept demonstration/validation decision, establishes broad goals and thresholds for program cost, schedule, and operational effectiveness and suitability. This phase emphasizes the principles of acquisition streamlining and design-to-cost, especially affordability in terms of program cost and risk versus added military value. Thus, the program manager should retain maximum flexibility to develop innovative and cost-effective solutions. Although prototyping

may be the next step, plans are being formed for transition from development to production, realistic industry surge, manpower and training, and logistics. By the end of concept demonstration/validation, the weapon-system program baseline is established in preparation for the most significant milestone—the decision to proceed with full-scale development (milestone II). Beyond milestone II, the work is system specific. Science and technology efforts contribute little to the full-scale development phase and begin to focus on preplanned product improvements for future upgrades during production.

Reporting at milestone II includes updating the COEA and preparing the decision coordinating paper, the acquisition strategy report, and the program baseline document. The decision coordinating paper summarizes the results of the concept demonstration/validation phase; identifies program alternatives; and establishes explicit goals and thresholds for program cost, schedule, and operational effectiveness and suitability.[18] The acquisition strategy report describes the major defense-acquisition program strategy that provides for the availability of competitive, alternative sources from the beginning of full-scale development through the end of production.[19] The program baseline is a formal agreement between the defense acquisition executive, the service acquisition executive, the program executive officer, and the program manager that briefly summarizes the program's functional specifications, cost, schedule, and operational effectiveness and suitability requirements, as well as other factors critical to the program's success.[20]



Milestone II is the first decision point where specific cost, schedule, and operational effectiveness and suitability objectives are established. It represents the end of the requirements planning phase of the acquisition process and the point at which the system requirements are finalized. A milestone II approval means that the full-scale development phase can proceed. Limited initial production of selected components and quantities should also be approved to verify production capability and to provide test resources needed to conduct interoperability, live-fire, or operational testing.

The remaining milestones include the decision to proceed to full production and deployment (milestone III); a review one to two years after initial deployment that assesses the logistics community's ability to support the system (milestone IV); and the major upgrade or system replacement decision (milestone V). Milestone V is the last major milestone in a system's life. Normally occurring five to 10 years after initial deployment, it reviews the system's current state of operational effectiveness, suitability, and readiness, which determines whether major upgrades are necessary or whether deficiencies warrant replacement. If the system should be replaced, this decision point initiates a mission area analysis, which leads to a milestone 0 decision. Hence, the milestones are cyclic, and milestone V initiates the requirements process for most new systems.

Problems with Current Practice

If the process just described is sound, then why all the criticism of requirements

planning? There are at least two interrelated explanations: (1) the process just described is not followed and (2) a significant, practical conflict exists between the requirements process and the budget process. The latter, which includes the Planning, Programming, and Budgeting System (PPBS) of the DOD and the annual congressional approval, is the dominant force. The conflict between requirements and budgeting creates three major, highly intertwined problem areas: a failure to make critical decisions at early milestones; an expectation for detailed information not consistent with the milestone; and a lack of funding for the mission area analysis phase through the concept development phase (i.e., resources to perform the work between milestone V and milestone I).

Critical Decisions at Early Milestones

Kent noted certain problems with DODD 5000.1 and DODI 5000.2. Specifically, he felt that the milestone definitions were vague and that no milestone provided clear criteria for making the critical decision to start a new weapon system.[21] Currently, the general—and incorrect—perception of milestone 0 is that the military is beginning a multibillion-dollar program. As a result, the budget process demands program-specific answers before committing to planning resources. This is a classic catch-22. The focus is not on the operational problem, as it should be, but on a major acquisition. Consequently, immature programmatic information (i.e., cost and schedule) flows into the decision making because planning resources prior to milestone 0 are inadequate. In point of fact, milestone 0 was not intended to be the critical acquisition decision point, but a statement that a problem exists and that a deficiency requires limited funding to explore potential solutions. The PPBS and the annual congressional approval corrupt the entire concept of incremental milestone planning because they require the military to budget for a "program" at milestone 0.

Expectation for Detailed Information

Cost is emphasized in the two documents that are required to make the milestone 0 decision: the mission need statement, which—besides describing alternative concepts—also identifies funding implications and an acquisition strategy; and the program decision package, which identifies resource information to be used in deciding among competing programs. But cost analysis at this milestone is a critical mistake. The exigency of the budget shifts the focus of milestone 0 from operational need to programmatic considerations, creating the demand for a significant amount of detailed information not yet available—at least from systematic planning and studies. Emphasis quickly shifts to projecting costs for some single solution, while a more practical examination of need and justification becomes secondary.

Lack of Funding through the Concept Development Phase

Prior to milestone I, the only available funding is reserved for research, development, and acquisition of a system. Without dedicated resources, one can perform only very limited analysis of mission area needs and can generate few viable alternatives. This is a critical flaw in the acquisition milestone concept.

Mission area analysis has been curtailed for many years. Neither the Air Staff nor the major operational commands (MAJCOM) are conducting this work, and AFSC is not equipped to substitute for the user at this point in the evolution of the requirement. Too often, the statements of operational need (SON) that are validated lack the broader context of the need within the mission area. Further, they seldom have the supporting data to satisfy the demands that are best illustrated by the COEA. In fact, the concept of first establishing a requirement, or military need, and then evolving alternatives seldom occurs. The deferred questions about the basis for the operational requirement must

be answered, and, eventually, they are. Unfortunately, the answers often arrive at later milestones, sometimes as late as milestone II.

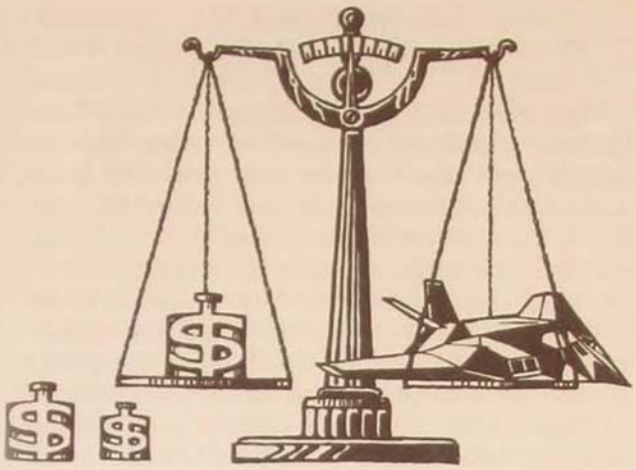
Might rigorous mission area analysis jeopardize system acquisition programs in full-scale development or in the early phases of procurement? It might. The mission area analysis could show that the capability being developed is insufficient to meet the operational requirement or is simply unnecessary. Yet, it is worth the risk. Only through mission area analysis will the planner, technologist, and user form a common understanding of the operational need.

Like some weapon systems, the V-22 Osprey, now in development, may fall victim to the discord that often arises between the budget process and requirements planning. Better coordination early in the planning program between users, designers, and the acquisition community could help the military in its development and procurement of new systems.

Requirements Planning Model

The following proposed model, based on Secretary Cheney's report, ensures that resources are used in the best possible way to support the operational requirement. Work is accomplished step-by-step—as needed—to support each milestone and is focused on the milestones' major objectives. Our model's goal is to give requirements planning a more disciplined approach that expedites acquisition through milestone III. The model also includes a closer relationship between science and technology, requirements planning, and weapon-system acquisition. Application of this model will provide early identification of technologies that require maturation, will improve science and technology forecasting, and will shorten the time to transfer technology. An improvement in the quality of trade-offs made early in the decision process is its prime objective.

Three things should be kept in mind as one examines this proposal. First, the



model addresses major acquisitions—the high-cost, closely scrutinized programs. One can use variations of this model for smaller acquisitions. Second, the model is not a radical departure from today's milestone process but suggests minor modifications in order to bring it more discipline. And third, forcing every acquisition to fit the standard model may not be necessary.

Secretary Cheney recommended modifying the acquisition milestones. In our model, milestone 0 is the approval to perform concept direction studies to "evaluate potential alternative approaches to meeting validated, priority needs."[22] At milestone I (concept approval) the requirements/cost trade-offs and initial affordability assessments are reviewed. Reviews at milestone II (full-scale engineering development) and milestone III (production) ensure that more exacting requirements are met. A new milestone IV, which replaces current milestones IV and V, addresses the need for major system upgrades or modifications to systems still in production.[23]

Requirements planning provides the link between milestone IV of the older program and milestone II of our "follow-on" program.[24] The phases include mission area analysis, SON prioritization, concept direction studies, and demonstration/validation. During these phases, one identifies needs, assesses alternatives, and performs trade-offs. The requirements for a major new system are continually refined until the process reaches milestone II's decision to proceed with full-scale development. At this point, one has weighed the alternatives and established a system baseline, and the Air Force, DOD, and Congress are ready to commit major resources. The following account describes how the phases should occur.

Mission Area Analysis

Scenario-driven mission area analysis may be performed by the Air Staff, several MAJCOMs, a joint command, or a single MAJCOM. This phase attempts to understand capabilities and deficiencies (problem oriented) as assessed against mission objectives and existing assets. Objectives play a significant part in determining the performance capability of the major command's systems. The national- and theater-level objectives depend on several pieces of information (fig. 3), especially concepts of operation—with the supporting doctrine—and environment. A single concept of operation may involve several missions and strategies. Since it is highly unlikely that all missions can be performed, one should identify the most critical ones. The environment includes scenarios in which we will employ the system (a drawn-out war; a short engagement; wars in Europe, Southwest Asia, or Central America) as well as threats the system will likely encounter.

Assets include our systems, manpower, training, and organizational structure. The determination of deficiency is based on the systems that we have on the ramp today, since those included in the Five Year Defense Program may change because of political pressure or unforeseen threats. (Mission area analysis must also analyze the effects of delays or the cancellation of FYDP programs.) Assessing the ability of assets to meet objectives provides insight into the capabilities and deficiencies for the mission area.

Deficiencies are documented in state-

ments of operational need, which—under our model—differ from the SONs currently in use. Our SON is a pure statement of need, emphasizing the results of mission area analysis. It is a user document—without programmatic (acquisition) data—which outlines the mission and basis of the need, and assesses capabilities. It does not define potential solutions. This contrasts today's practice of submitting a SON with a proposed (foregone?) solution. Our SON states only the need because its singular purpose is to document the results of mission area analyses.

This is an important first step to improving the planning process because separating mission area analysis from concept direction studies distinguishes the roles of the user and the implementing command (AFSC). With the need well understood, the user still leading the process, and the implementing command fully participating, the concept direction study can develop a menu of solutions. The quality of the programmatic data developed, and likely to be available, need only be good enough to select from the menu of competing alternatives—the milestone I objective. Thus, the cost, schedule, and performance data developed in concept direction is not "budget quality." Programmatic data of a quality sufficient to establish a contract be-

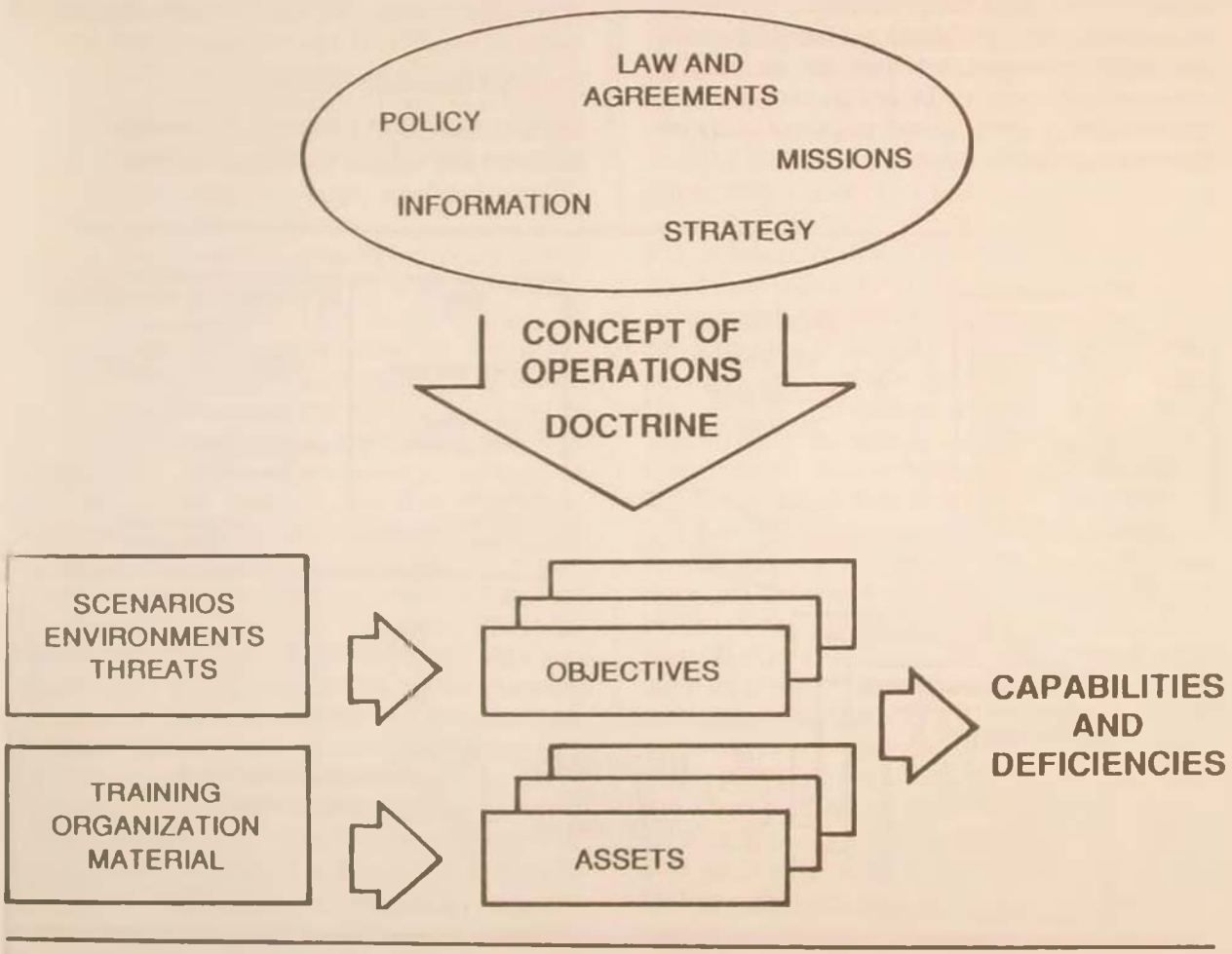


Figure 3. Mission Area Analysis.

tween DOD and Congress does not emerge until milestone II.

SON Prioritization

The results of mission area analyses are sets of command (MAJCOM) SONs. During mission area analysis, AFSC acts as an observer or consultant and provides information, if needed. But now that the needs are defined, an Air Force perspective must be established. The lead must come from Headquarters USAF, Deputy Chief of Staff for Plans and Operations (Headquarters USAF/XO). Air Force prioritization is necessary to compete effectively for the limited resources DOD will make available for concept direction studies. It assures that an Air Force-wide priority has been provided to the Joint Requirements Oversight Council (JROC) for review and incorporation with the other services' needs. It is later provided to the Defense Acquisition Board (DAB) for annual requirements review and prioritization.

This milestone 0 decision differs from current practice in that a system-specific program decision package is not required, since the decision has not been made to develop a major new system—only to explore alternatives for the highest-priority Air Force needs. A program decision package may be needed to budget resources for Air Force-sponsored concept direction studies for acquisitions that are less than major and do not require DAB approval. These studies are manpower intensive, so cost projections should be fairly accurate. Once DOD and the Air Force define the budget for the associated concept direction work, this identifies the number of studies that can be performed. If more needs require examination, Headquarters USAF/XO urges an increase in the budget.

Concept Direction Studies

Insight into this phase of the requirements process has already been provided. Stud-

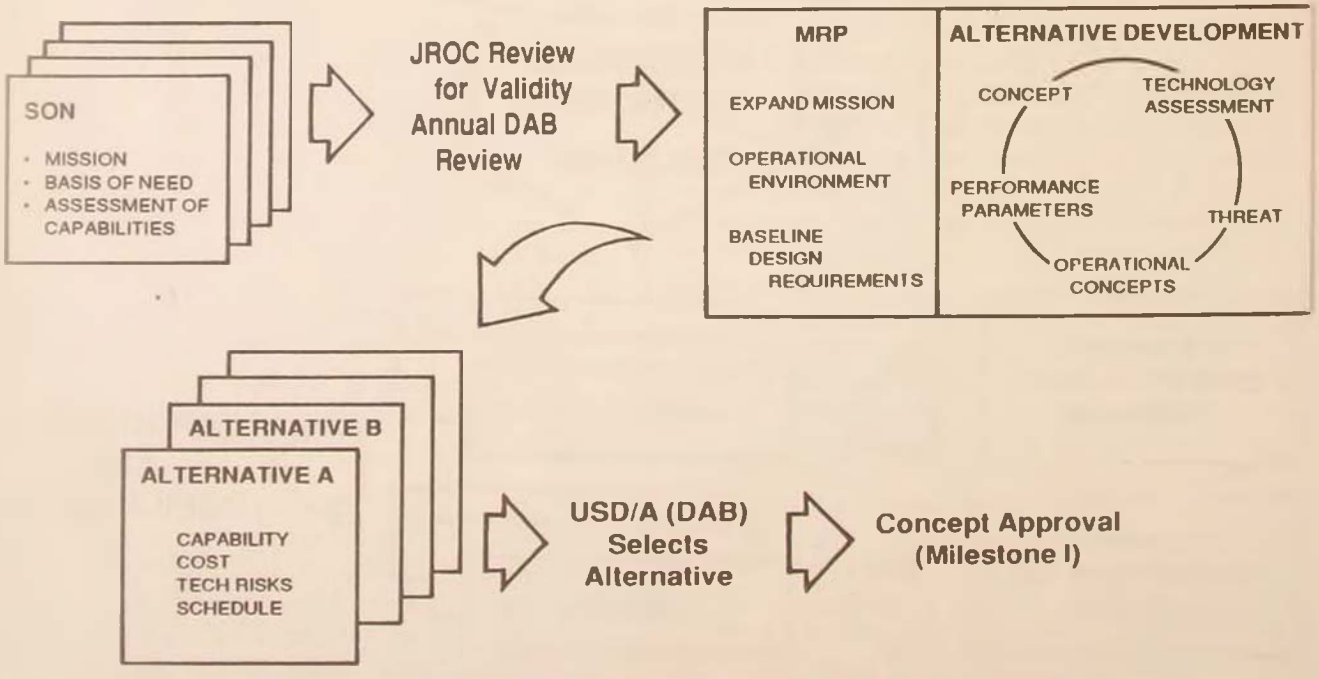
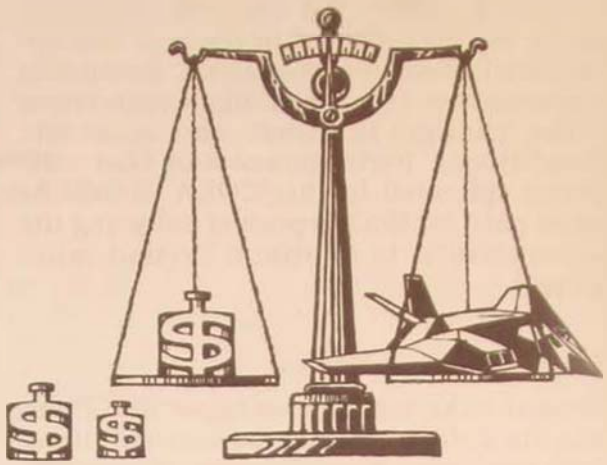


Figure 4. Concept Direction Studies.

ies are performed that define a set of alternatives which meet the need defined in an SON. The objective of the concept direction studies is to provide the answers needed at milestone I: why a particular alternative was selected or others discarded. This is the type of information that the Air Council, Office of the Secretary of Defense (especially the Directorate for Program Analysis and Evaluation), and Congress will demand. Four to six studies per year, each lasting six to nine months, could probably be handled by the joint efforts of Air Force Studies and Analysis, AFSC, and the sponsoring MAJCOM.

The concept direction studies team is comprised of planners, technologists, and users. It could include industry participation. Cross-representation ensures that the team understands the deficiency and considers the possible applications of new technology. The purpose of the studies is to define the best option to meet the operational need. Consequently, the studies define system alternatives; make overlays of operational benefit, cost, and schedule; and perform trade-offs.

Two subphases of concept direction are necessary: preparation of a mission requirements package and development of alternatives (fig. 4). Prepared by the user, the mission requirements package is based on the mission area analysis and provides the study framework from the operations viewpoint. Although concept direction studies should be user led (i.e., the user provides the study director), AFSC plays a significant role by providing the manpower to perform the analyses and monitor contractual studies. The user assists in the understanding of the mission requirements and the operational environment. Hence, the mission requirements package defines the deficiency, the concept of operations, and the objectives that the new system is to meet; it also addresses mission criticality. Typically, the concept of operations includes more than a single mission. Therefore, the mission requirements package needs to define the relative criticality of each mission—an important factor in selecting the best alternative.



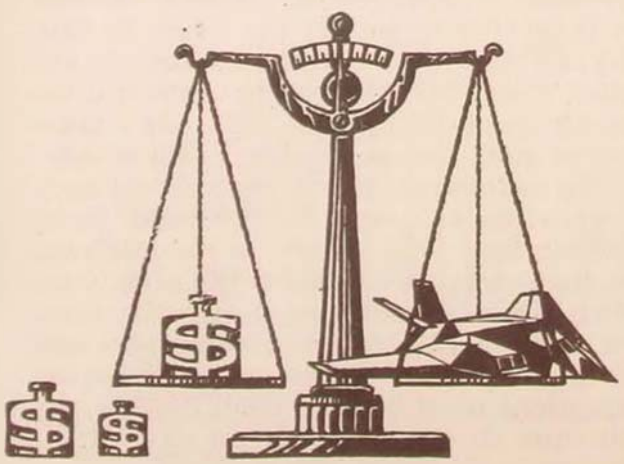
The alternative selected at milestone I is defined in terms of operational benefit, new technology, and support factors (reliability and maintainability) that yield insight to life-cycle costs. Alternative concepts arise from the user, Air Force planners, industry or study houses, and Air Force laboratories. These concepts include modifications to existing systems, new versions of current systems, or new—even radical—approaches. Within the framework of the mission requirements package, the options are then evaluated by using predefined measures of merit. The effectiveness of the concept is judged by its ability to meet the objectives described in the mission requirements package—that is, by its ability to satisfy the need. In this way, all concepts are tested against one another. Cost—both life-cycle costs and research and development costs—is a measure of merit, but only relative cost is valid to this evaluation. Ideally, the cost of each alternative is based on the same cost-analysis tool. The results of the analyses are then compared to show the sensitivity to changes in operational effectiveness. For each alternative, the assumptions and the consequences of changes in these assumptions must be described. Further, acquisition strategy, though not an overriding factor, should be considered.

The results of the concept direction study are documented in the cost and operational effectiveness analysis. Because of uncertainties (e.g., technology-maturation risks, changes in threat, and economic conditions), performance and cost estimates reflected in this COEA should be used only for the purpose of selecting the alternative(s) to continue beyond milestone I.

Demonstration/Validation

Several risks and technological uncertainties are defined during the concept direction studies and outlined in the COEA. The demonstration/validation phase eliminates or reduces these risks and demonstrates how military capability is thus enhanced. The results of the demonstrations allow one to establish estimates of affordability, or cost versus added military value. Additionally, this phase examines issues involving manpower, training, and logistics in detail.

During demonstration/validation, one finalizes the system requirements and thereby establishes a baseline. The COEA is then updated to reflect the chosen alternative. (This is a refinement of the milestone I step and not a revisit of the full alternatives matrix.) Moreover, specific data on cost, schedule, and operational effectiveness becomes more reliable. Adequate information is now available to make a decision to begin full-scale development (milestone II) and expend major resources. As a reminder, every acquisition does not need to follow this model. If the need is well understood and the preferred system alternative defined, it may be possible to compress all these actions into one milestone decision.



Summary

The theory behind the milestone planning process, introduced in the early 1960s, remains sound. Unfortunately, the theory is not put into practice, and the conflict between requirements planning and budgeting has caused milestone planning to erode. The proposal presented here yields three advantages. First, the potential solutions are better understood, in that the SON results in a formal examination of solutions without the imposition of the budget process. Second, the best solution is likely to be among the potential solutions. And third, technology is not an afterthought in the proposed model. By having the technologists involved and by performing concept direction studies before a "real" program is established, one has time to work the technological issues before settling on a solution. The concept direction studies will also provide better input to the investment strategy for science and technology, thus strengthening that program. Further, our proposal produces better predictability in technology availability, reduces technological risk, and improves technology transfer. Last, experiments play a critical role in this model. In fact, the length of time between milestone 0 and I is dependent on whether experiments to validate alternatives are needed.

The need-to-requirements process (fig. 5) involves understanding the problem of defining a solution. One achieves discipline in the need-to-requirements process, not by taking the need as a firm requirement but by continually assessing the system against its critical mission, clarifying

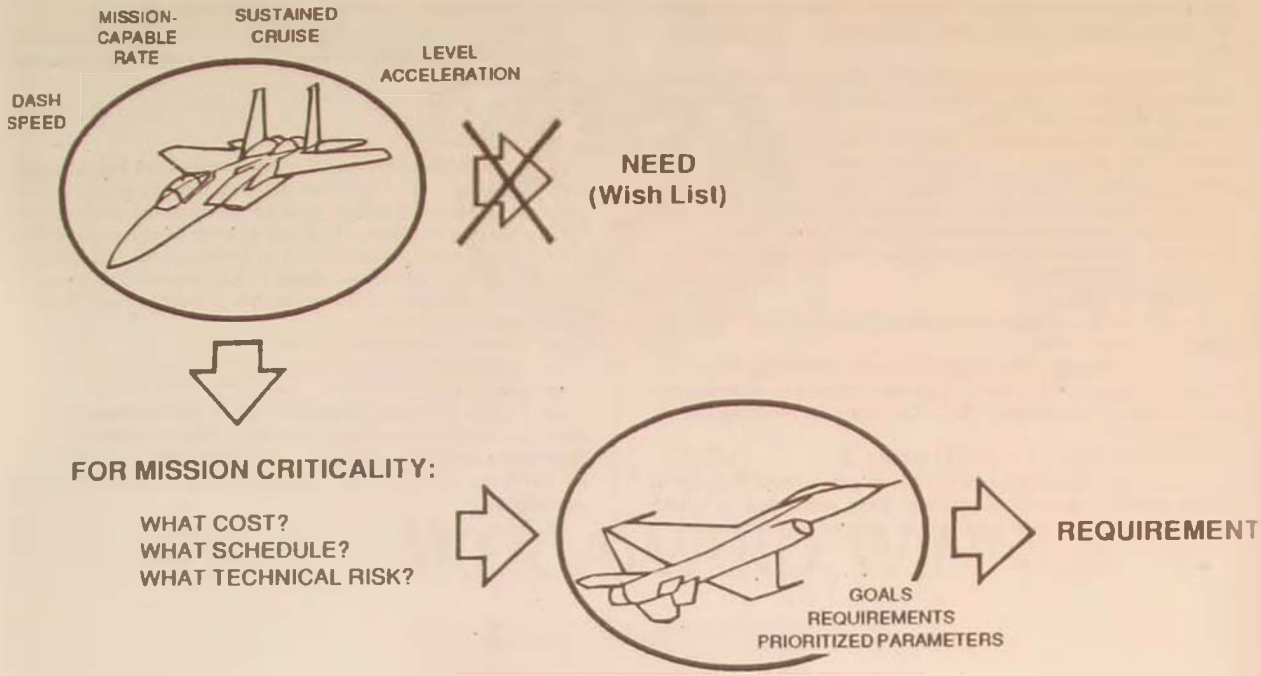


Figure 5. From Need to Requirement.

and alleviating the risks, and prioritizing the parameters of performance. Responsibility resides in both the user and acquisition communities. On the one hand, users must understand that not all their needs can be met and must see that their priorities fall within the overall context of the mission area. On the other hand, the responsibility of the acquisition community is not to argue the value of one requirement over another but to show what can be done (and when) and offer alternatives. Thus, the requirements process is give-and-take—a continuous scrubbing of both problem and solution. Winnefeld describes it well:

> In the process of acquisition, system performance requirements acquire a life of their own. It is too widely perceived that to back off requirements is a sign of failure—rather than of choice to attain a better mix of capabilities within the resource envelope. Requirements should be tuned on the same principle that resource allocation is tuned (though hopefully not as often). At some point the strategy and threat must be revisited to see if the new systems development compromises fit with them as well as with the resources available.[25] □

Notes

1. James A. Winnefeld, *Killing the Messenger: The Place of Systems Acquisition in the National Security Planning and Management Systems*, Rand Report P-7417 (Santa Monica, Calif., Rand Corporation, May 1988), 32, 33.
2. Col Alexander P. Shine, "Theater Airlift 2010," *Airpower Journal*, Winter 1988, 9.
3. Glenn A. Kent, "A Framework for Defense Planning," Rand Report R-3721-AF/OSD, January 1989 (draft), 48
4. Ibid., 49.
5. Gen Larry D. Welch, Air Force chief of staff, discussion with coauthor (General Ferguson), April 1989.
6. David Packard, "Micromanagement: The Fundamental Problem with the Acquisition System," address to the Acquisition Leadership '88 Conference, Defense Systems Management College, Fort Belvoir, Va., 14 July 1988.
7. Glenn A. Kent, *Concepts of Operations: A More Coher-*

ent Framework for Defense Planning, Rand Report N-2026-AF (Santa Monica, Calif.: Rand Corporation, August 1983), 23.

8. Secretary of Defense Richard B. Cheney, *Defense Management: Report to the President* (Washington, D.C.: Department of Defense, July 1989).

9. DOD Directive 5000.1, *Major and Non-Major Defense Acquisition Programs*, 1 September 1987; DOD Instruction 5000.2, *Defense Acquisition Program Procedures*, 1 September 1987. The discussion in this section is based on the requirements process as it existed prior to the publication of Secretary Cheney's recommendations in his response to National Security Review 11.

10. DODD 5000.1, 1.

11. AFR 57–1, *Operational Needs, Requirements, and Concepts*, 7 October 1988.

12. US Air Force, Directorate of Programs, *The Planning, Programming and Budgeting System (PPBS)—A Programmer's Primer* (Washington, D.C.: Government Printing Office, January 1987).

13. DODI 5000.2, 6–7; DODD 5000.1, 2.

14. For the uninitiated, milestones are a recurring set of phase points in a cyclical process. They are points at which one decides whether to continue or stop an acquisition.

15. DODD 5000.1, 3–4. See also DODI 5000.2, 2–4.

16. Office of the Assistant Secretary of the Air Force for Acquisition, *SAF/AQ Action Officer's Handbook*, March 1988, 10.24.

17. Ibid., 10.26.

18. Ibid., 10.24.

19. Ibid., 10.25.

20. DODI 5000.2, 8. Note that each milestone has a "baseline" document. The mission need statement serves as the program baseline at milestone 0 for the concept exploration/definition phase. Annex B of the system concept paper becomes the program baseline at milestone I for the concept demonstration/validation phase. The acquisition program baseline is established at milestone II and carries through subsequent milestones.

21. Kent, "A Framework," 26.

22. Cheney, 18.

23. Ibid., 19.

24. *Follow-on* is not meant to imply that the new system does the same job as the old system. The follow-on system does what the old system does not: provides the capability to perform the current mission in the current threat environment.

25. Winnefeld, 34.

SPRING 1990

IRA C. EAKER AWARD WINNER

Dr Richard P. Hallion

for his article

Battlefield Air Support: A Retrospective Assessment

Congratulations to Dr Hallion on his selection as the Ira C. Eaker Award winner for the best eligible article from the Spring 1990 issue of the *Airpower Journal*. Dr Hallion receives a $500 cash award for his contribution to the Air Force's professional dialogue. The award honors Gen Ira C. Eaker and is made possible through the support of the Arthur G. B. Metcalf Foundation of Winchester, Massachusetts.

If you would like to compete for the Ira C. Eaker Award, submit an article of feature length to the *Airpower Journal*, Walker Hall, Maxwell AFB, AL 36112-5532. The award is for the best eligible article in each issue and is open to all US military personnel below the rank of colonel or equivalent and all US government civilian employees below GS-15 or equivalent.

NATO AIR OPERATIONS AFTER ARMS CONTROL

LT EDWARD H. FEEGE, JR., USN

In July 1989 NATO officially acceded to Soviet and Warsaw Pact demands that combat aircraft be included in the Conventional Forces Europe (CFE) arms control talks. For the first time, NATO's air forces, which embody a significant part of the alliance's overall firepower, are open to potential cuts. While no clear outcome is discernible yet, chances are that NATO's and the Warsaw Pact's force structure will be reduced in the 1990s in the aftermath of an arms control agreement driven by both a changing political climate and the search for budgetary savings.

The traditional roles assigned to NATO aircraft revolve around two major efforts: the maintenance of air superiority and the defense of NATO airspace, and support for land (and sea) operations. How cuts might affect the ability of NATO's air forces to carry out these traditional conventional missions is still uncertain. Nevertheless, the inevitability of force cuts makes it prudent to consider these cuts now, since the


HL

end result may well be significant changes in the way NATO air forces are organized and employed.

To determine what air capabilities will be available to NATO commanders after arms control, we must examine future force structures, threats, and operations—all of which will be shaped in turn by the political and military imperatives of an evolving alliance and by a rapidly changing strategic picture. The most obvious first step, then, is to review the proposals forwarded in CFE talks, for this is the only existing, rigid framework for reductions. Follow-on agreements may be quickly concluded, particularly if the trends toward the dissolution of the Warsaw Pact as a military alliance continue at their present pace. The qualitative and quantitative outlines of such an accord, however, are likely to be driven by social and political events that are as yet unclear. Consequently, the current CFE proposals become the best means for NATO military personnel to predict how their future forces will look, at least for the next 12 months.

Current Arms Control Proposals and Problems

The proposed numbers shown in table 1 raised some immediate points of contention. Most obvious among these was the Soviet refusal to include aircraft with "defensive missions," in the category of "combat aircraft" on the grounds that "they have no ground attack capability and are not part of the surprise attack potential."[1]

Questions of Definition

Initially, the Warsaw Treaty Organization (WTO) definition was to extend to all frontal aviation (FA) and national air defense (e.g., V PVO) aircraft in the Atlantic-to-the-Urals (ATTU) area. Subsequent proposals narrowed this to V PVO aircraft (excluding the FA's fighter assets), since the Soviets continued to argue that these aircraft are intended solely for the strategic air defense of the USSR. NATO, for its part, still refuses to accept the WTO definitions, arguing that a defensive aircraft can be quickly reconfigured for an offensive role. NATO commanders rejected as too glib the Soviet characterization of most NATO aircraft as "offensive" while exempting 1,600 to 1,800 aircraft of their own, particularly when the Soviets themselves credit the V PVO with a secondary theater defensive role.[2] A further argument has been that an aircraft's character is primarily determined by the strategic context in which it is used. The maintenance of air superiority would be critical to the success of any Soviet action against NATO. Thus, ostensibly defensive aircraft would play an integral role in an offensive action. V PVO aircraft would certainly be pitted directly against NATO tactical aircraft in northern Norway, and perhaps over Turkey, if hostilities were to break out. For the Soviets, this option becomes even more feasible as their purely interceptor aircraft (Su-15s, Tu-28s) are replaced by aircraft such as the Su-27 that are capable of vigorous air combat maneuvering. Finally, Su-27s and other fighters are integrated into the air armies of the Supreme High Command for strike escort duties, making it difficult to distinguish between fighters involved in air defense and those with more offensive taskings.[3]

Another dispute has arisen over NATO's insistence that trainer aircraft be included in each of the alliance's overall totals. New Soviet and other Warsaw Pact pilots do not possess the knowledge and proficiency of their Western counterparts when they report to their first operational command. There being no equivalent of the Western operational conversion units, the Warsaw Pact air forces rely on nominally unarmed, two-seat trainer versions of squadron aircraft to bring their fledgling pilots up to speed. These training programs would be severely curtailed if NATO proposals were accepted. Conversely, the NATO position was at least partially based on its own use of trainers in ground attack and air-to-air roles (aircraft such as the Royal Air Force's Hawk).[4] Soviet offers of mutual on-site in-

spections of airfields might provide NATO with the means to ensure that Warsaw Pact trainers perform that mission alone.[5]

A third question concerns the treatment of aircraft tasked with maritime missions (either land- or carrier-based) and ostensibly strategic missions. The Soviets do not include their Tu-26 Backfire bombers in their totals, although these bombers make up a significant percentage of the Smolensk air army. Since this force is dedicated primarily to strategic nuclear missions (it also possesses Tu-95 Bear H and Tu-160 Blackjack bombers with intercontinental range), NATO could find it difficult to push for their inclusion, particularly if

TABLE 1

PROPOSED CFE AIRCRAFT CEILINGS

	NATO	*Warsaw Pact*
Atlantic-to-the-Urals (ATTU) Sublimits:		
Combat aircraft	5,700	4,700*
Combat helicopters	1,900	1,700
Sufficiency Rule:**		
Combat aircraft	3,420	1,200
Combat helicopters	1,140	1,350
Stationing Rule:***		
Combat aircraft	none	350
Combat helicopters	none	600

Notes:

*Original proposal was for 1,500 combat aircraft.

**Stipulates that no one country within an alliance may retain aircraft in excess of a set percentage of overall alliance limits.

***Prohibits any nation from maintaining an ill-defined "disproportionate" number of offensive weapons in forces stationed outside of its national territory.

Sources: Adapted from Phillip A. Karber, "The Implications of the Gorbachev Reductions for Conventional Arms Control," presentation to the North Atlantic Assembly, 29 May 1989 (McLean, Va.: BDM Corporation, 1989), 39; Air Vice-Marshal R. A. Mason, "Airpower in Conventional Arms Control," *Survival* 11 (September–October 1989): 398; *AAS MILAVNEWS* (Supplement to the International Air Forces and Military Aircraft Industry Newsletter) 28, no. 334 (August 1989): 18; Michael R. Gordon, "Soviets Ease Stand on Aircraft Cuts in Europe," *New York Times*, 21 September 1989, 16.

it wants to keep French aircraft with strategic and prestrategic missions (the Mirage IV-P and the Mirage 2000N) from being counted against its own totals. The Soviets also contend that their Tu-26s and other aircraft belonging to Soviet naval aviation (SNA) should not be included in Warsaw Pact totals since they would not be used against land targets (only in a defensive role against offensive Western naval forces). This contention runs counter to earlier Soviet writings of joint operations by FA and SNA aircraft against NATO forces and airfields.[6]

Such an exemption could allow unconstrained production of Tu-26 Backfires and other capable standoff platforms, as long as they were based with the Smolensk air army or at SNA fields and practiced primarily naval missions. In return, NATO would keep aircraft such as Buccaneers and Tornadoes from being included in its totals. While these are highly useful, highly capable aircraft (and do retain a nuclear capability), it is uncertain whether they possess the same mission capability as the SNA Backfire force (which is mainly structured for the less demanding standoff missions).[7]

Carrier-based aircraft present a similar problem. Soviet totals include them, while NATO negotiators contend that they are not land based and hence not subject to CFE constraints. Their view is that aircraft carriers and their air wings have global roles rather than being strictly apportioned to NATO missions. They also see these aircraft as being in the same category as air reinforcements based in the continental United States (CONUS), particularly in the Northern and Southern regions.[8]

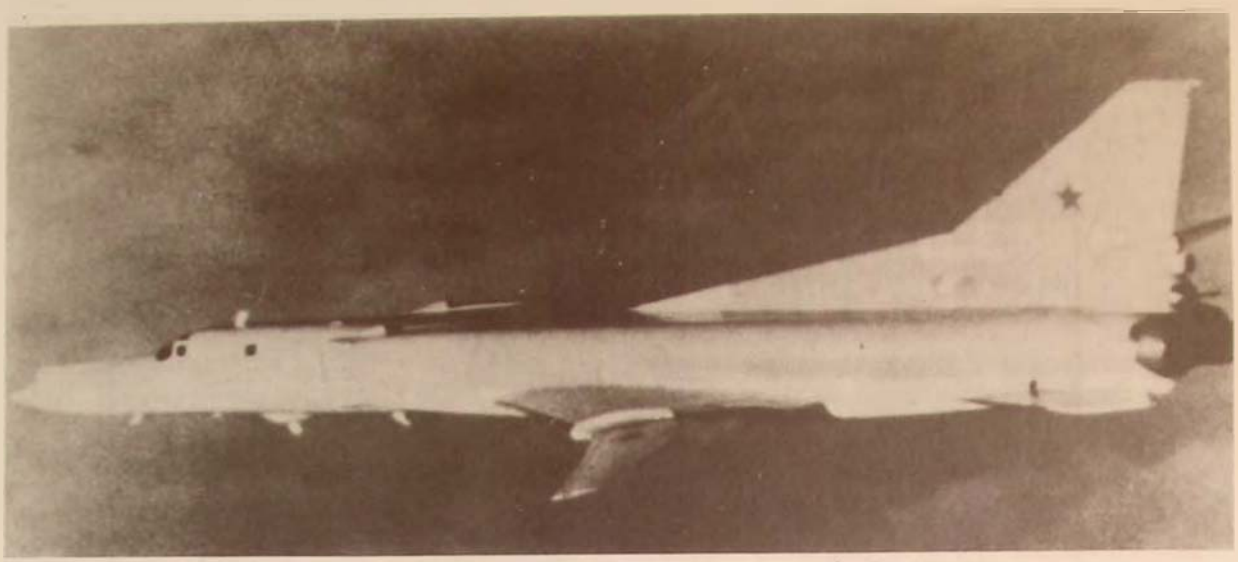
Last among the specific points of contention is the concern over the definition of *combat helicopters*. Again, the difficulty of determining the difference between offensive and defensive aircraft tended to hinder agreement since almost any helicopter can be fitted with guns or rockets. Hence, attempts by the Soviets to keep their heavier transport helicopters out of consideration were vigorously opposed by NATO. This issue would take on an even greater significance in a post-CFE environment, when mobility and striking power will be increasingly important for the remaining ground forces. Even before an agreement, both the NATO and Soviet armies are placing greater emphasis on airmobile units.[9]

These are the issues requiring resolution before an agreement involving aircraft can be reached. Each holds the potential to allow one bloc to gain a meaningful advantage over the other in the air and thus cannot be ignored. Yet another such issue concerns the geographic distribution of required cuts.

Problems of Geography

In its proposal, NATO placed specific constraints only on aircraft actually in the ATTU region. NATO rejected the notion that sublimits could be placed on aircraft based on their location within this area despite the fact that it had accepted this for other weapons (see fig. 1). The reasoning behind this refusal relied on the idea that aircraft are inherently flexible and easily redeployed. In this view, only theaterwide reductions would, with any certainty, reduce the capability of aircraft to quickly redeploy forward and engage in subsequent surprise attacks. Additionally, subregional restrictions would hamper NATO's own ability to distribute its air assets throughout Europe.[10]

As shown in figure 1, the Warsaw Pact proposals do include regional sublimits on aircraft. As they currently stand, limitations seem to constrain NATO options more than those of the Warsaw Pact. Under this plan, Soviet air defense problems caused by NATO tactical aircraft on its northern and southern borders essentially would disappear since, by Soviet reasoning, air defense forces would remain intact while NATO's aircraft would be tightly controlled. The situation could become so benign from the Soviet point of view that the Soviet Union could redeploy some assets to face its last coherent NATO threat in the Central Region, at least while NATO chose to honor any in-place regional sublimits.



The Soviets do not wish to count aircraft tasked with maritime missions, even if they are land-based aircraft. Aircraft such as this Backfire bomber, with standoff missile capability, would then become even greater lethal threats in a post-CFE environment.

It is unclear, then, why NATO would accept these constraints, or a stationing rule for aircraft. The end result of this would be a net loss in the alliance's ability to reinforce its units in a time of crisis without abrogating a valued treaty. In effect, NATO would be putting itself in a political quandary that would be difficult to resolve if the threat of hostilities ever loomed.

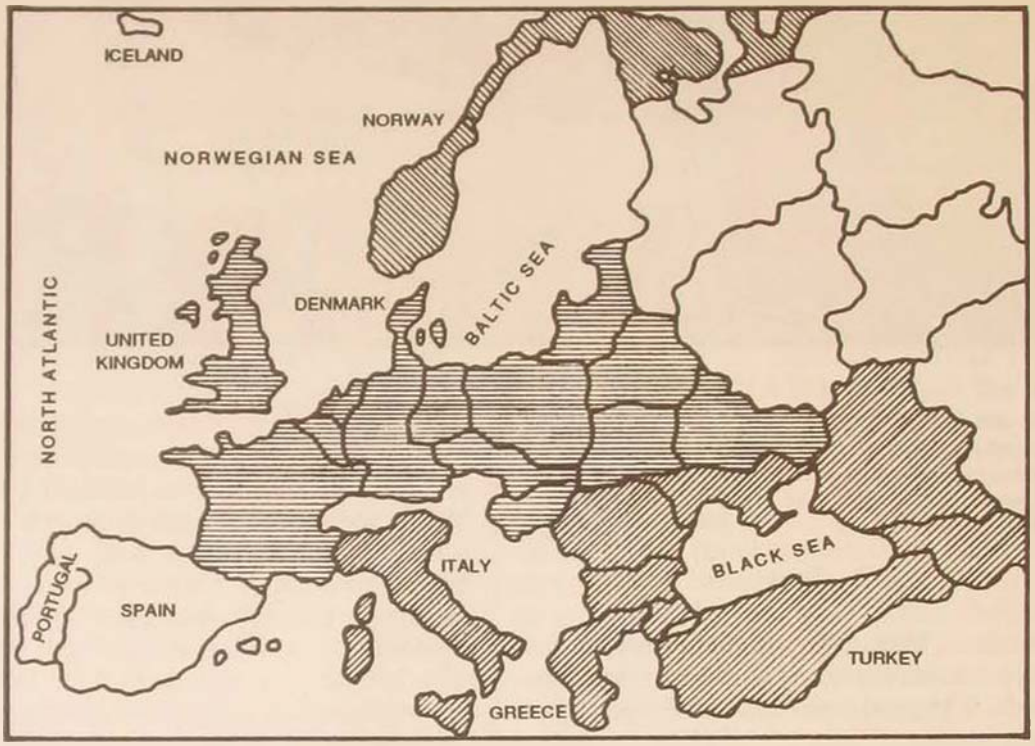
NATO's Problem—What to Cut?

One tally of the fixed-wing aircraft included in each side's current proposals is shown in table 2. Clearly, the major problems are the definitional problems mentioned above. But even if these are successfully negotiated away, problems would still remain for NATO. Chief among these would be deciding which aircraft to cut when an agreement is reached.

Initial proposals for a 15-percent across-the-board cut by all NATO nations to meet even their own proposals would have meant cuts in some of the newest, most capable aircraft in some countries' inventories (including some capable of long-range nuclear delivery). Subsequent plans postulated heavier reductions in NATO's oldest and less capable aircraft and air forces. The concept of "cascading" was introduced to implement this reduction. Under its terms, "nations would get rid of some of what they consider their less capable aircraft and give or sell them to another country that has even less capable aircraft."[11]

Under this scheme, NATO's hypothetical 15-percent reductions would be borne, for the most part, by nations in the Southern Region, which currently maintain the oldest inventories. Their air forces would make more than their share of the cuts, in some cases eliminating whole classes of aircraft, to ensure that the alliance meets it overall goals. A tentative US proposal would make these same deep cuts (but go above and beyond the required 15-percent cuts) and build back up to allowable levels by transferring F-16s to the affected countries. This would increase commonality and interoperability among national forces, would serve as an impetus to greater standardization of logistics and training, and would facilitate any potential US reinforcement effort.[12] Such a proposal, however, would not be well received by

WTO-PROPOSED REGIONAL SUBZONES



WTO-PROPOSED CEILINGS

	NORTH	CENTER	SOUTH	REAR
HELICOPTERS	30	1,250	380	80
AIRCRAFT	30	1,120	290	90

Note: NATO-proposed ceilings for helicopters and aircraft are 1,900 and 5,700, respectively, for each alliance, to be positioned anywhere within the Atlantic-to-the-Urals region.

Source: Phillip A. Karber, *The Implications of the Gorbachev Reductions for Conventional Arms Control*, presentation to the North Atlantic Assembly, 29 May 1989 (rev. 18 August 1989), (McLean, Va.: BDM Corporation, 1989), 33.

Figure 1. Comparison of NATO- and WTO-Proposed Regional Subzones.

the European aerospace industry or by European governments. Additionally, the generic "cascading" concept would still require a wholesale turnover in methods of training, maintenance, and weapon inventories, as well as the ushering in of many legal and financial problems.[13] Nevertheless, it appears that both alliances will put some version of this idea into effect if and when an agreement is reached.

NATO would have a difficult task meeting the requirements of their own CFE proposal; Warsaw Pact proposals would cause even greater problems. The dilemmas of what to cut and how to verify the cuts can probably be resolved, but only after exacting interbloc negotiations. For this reason, outgoing US negotiator Stephen Ledogar suggested that aircraft be temporarily removed from the CFE agenda, allowing other and more tractable issues to be resolved.[14] But whether the Soviets would be willing to accept this is another matter.

It seems fairly obvious that the Soviets, to mitigate the threats they face, would not do so. Thus, "the Warsaw Pact approach implicitly proposes a trade of armor for airpower."[15] To some analysts, it would be sensible to take up this offer by cutting its "deep interdiction" aircraft in exchange for asymmetrical cuts in Soviet ground formations, or for similar cuts in Soviet "deep-strike aircraft."[16] But NATO's official position is that cuts in its air forces will only come in tandem with cuts in Warsaw Pact air forces. Thus, it is becoming increasingly clear that if the Soviets demand the inclusion of aircraft as the price of a CFE agreement, NATO will in turn insist that inventories be slashed across the board, not just in specific categories, leading to a much smaller—and theoretically a balanced—force structure.

Such an outcome could spring from an initial CFE agreement, but the pace of change in Eastern Europe might soon require that NATO look even further than this. As was mentioned earlier, the mandate for a "CFE II" is still uncertain. Nevertheless, the pressures for further action will undoubtedly be present.

The promise of non-Communist governments springing up throughout the non-Soviet Warsaw Pact (NSWP) nations portends a profound change in Europe's strategic environment and hence in NATO's own roles and structures. The Warsaw Pact's "Statute on the Combined Armed Forces and Organs Commanding Them in Times of War," under which NSWP forces can be mobilized and placed under a Soviet theater commander (without the concurrence of their respective governments), still appears to be in effect.[17] However, it remains to be seen how long Eastern European governments no longer dominated by Communist parties will remain comfortable with these arrangements, or even with reduced numbers of Soviet troops and aircraft on their territory. Conceivably, the Soviets eventually may decide on their own to withdraw most of their forces, leaving only token forward detachments in the name of "new thinking."

Under such conditions, the need for substantial forward-deployed NATO air forces may need to be rethought and emphasis placed on reinforcement capability. Conversely, some NATO nations may choose to leave a fairly robust (within CFE limits) air force structure intact, relying upon it to buttress smaller, more mobile, ground forces and to cover the many possible permutations of conflict that may arise in a rapidly changing Europe.

Such scenarios are, for now, in the realm of speculation because the Soviet Union still maintains its strong presence in Central Europe. The unilateral cuts announced by General Secretary Mikhail Gorbachev in December 1988 hold some promises for raising the strategic warning time of any Soviet attack by 5 to 10 days. Nevertheless, even with these reductions, "the Soviet Union will retain significant military in major conventional offensive weaponry and possess the capacity for mounting a large-scale offensive against NATO."[18] The CFE negotiations address this near-term situation and thus will have the greatest immediate effect on NATO and Warsaw Pact force structure. It is in the context of

these initial cuts that NATO must determine how an agreement may affect its requirements in different mission areas.

Counterair

The severity of NATO's air defense problems in the future will depend, to a large extent, on the makeup and geographical disposition of Soviet air forces in Europe.

The historical Warsaw Pact air threat to NATO's defense plans centered around two major operations: the air and the antiair operations.[19] Intended to be carried out in support of Warsaw Pact operational-level goals, they were meant to disrupt NATO's defensive response to an invasion and to prevent the effective application of the alliance's air power against Warsaw Pact ground operations. The first of these, the air operation, was to be carried out primarily by the Legnica, Vinnitsa, and parts of the Smolensk air armies of the Supreme High Command in conjunction with FA and SNA units, as well as surface-to-surface missile (SSM) units, heliborne raiding parties, and special operations (Spetsnaz) units. It was designed to destroy or suppress NATO's command and control links, storage and delivery systems for nuclear weapons, and NATO's air bases and supporting infrastructure. If successful, the air operation would have inhibited any effective NATO retaliation (particularly nuclear) against Soviet ground operations.

In practice, the air operation was to involve two or three large-scale, massed strikes involving up to 1,200 aircraft, followed by a series of follow-on raids by FA assets and again by strategic aviation, so that NATO would not be able to regenerate a viable air capability. Air army attacks were to be supported by intense jamming of NATO radar and communication links, and air defense suppression was to be accomplished by tactical air, SSMs, and artillery bombardment.

Overlapping this operation was the antiair operation, which was designed to deny NATO air superiority by the continual attack and harassment of its main operating bases (MOB) and the overwhelming of those formations that did get airborne.[20] It would also have the effect of forcing NATO to commit its "swing" (dual-role) aircraft to a defensive battle rather than to the support of the ground battle. The practical result would be a major reduction of useful NATO sorties, which would have a salutary effect on Warsaw Pact ground operations, and would allow FA operations in the fire support and accompaniment roles to proceed unmolested.[21]

Despite their stated reversion to a defensive doctrine, Soviet military-technical writings increasingly point to the need for simultaneous operations throughout the entire depth of an enemy's formation, including deep air strikes, which they expect to be used against their own defenses.[22] It appears, then, that the Soviets still see the need for offensive air operations into NATO territory in the event of war, even if their own forces were to maintain defensive positions (either as an end in themselves or as a covering force for an eventual counteroffensive).

How a CFE agreement would affect this situation is obviously dependent on which proposal is finally accepted. The latest Warsaw Pact position of September 1989 would keep air defense or V PVO virtually unscathed, while leaving other NATO and Warsaw Pact aircraft subject to reductions. These assets could, depending on the overall likelihood of attack on the Soviet homeland, become a significant augmenting force for the remaining FA fighters in Eastern Europe, freeing the latter to throw their full weight into covering offensive operations over NATO territory. The V PVO, if left with all or most of its aircraft and facing a reduced strategic threat (perhaps as the result of a Strategic Arms Limitation Talks—START—treaty), would be able to maintain a vigorous defense over Soviet lines of communication through Eastern Europe. This would almost preclude any sustained, unreinforced interdiction effort (either conventional or nuclear) by NATO, especially if NATO had

TABLE 2
NATO AND WTO AIRCRAFT IN EUROPE BEFORE AND AFTER PROPOSED CUTS

		WTO Definition	*Added in NATO Definition*		
		Combat	*Air Defense*	*Trainer*	*Total*
Baseline	NATO	5,322	0	1,384	6,706
	WTO	5,198	1,694	5,700	12,592
After NATO-proposed cuts	NATO	5,322	0	378	5,700
	WTO	4,304	1,396	0	5,700
After WTO-proposed cuts	NATO	4,700	0	1,384	6,084
	WTO	4,700	1,694	5,700	12,094

Source:
Institute for Defense and Disarmament studies, reprinted in *Aviation Week/Space Technology*, 30 October 1989, 36.

greatly reduced its numbers of long-range penetrators or was withholding them for later use.

Even if final agreement approximated the limits put forward by NATO, it is still not clear that the Soviets would not be unable to carry out an effective airfield suppression campaign. Within the limits of 3,420 combat aircraft allowed under the NATO proposal, the Soviets could still assemble a potent, mixed force of fighters, heavy bombers armed with a mix of standoff and free-fall weapons, and fighter-bombers for tactical missions.[23] This force could be arrayed against a reduced NATO target set, particularly if NATO decided to consolidate its forces to a smaller number of MOBs or had less short-range nuclear delivery systems in the wake of arms control or budget cuts. It could also face less dense ground-based air defenses.

Theoretically, the Soviets could throw the same numbers of aircraft into an air operation after a CFE agreement as they would have before, since NATO's proposal would allow them to retain the estimated 1,200 aircraft needed to carry it out. As suggested by figure 2, the 15-percent cuts in the inventories of both alliances would still leave a significant offensive potential. Even the initial Soviet-proposed sufficiency limits of 1,200 aircraft (excluding V PVO) would have provided the Warsaw Pact with enough offensive potential to conduct a vigorous campaign. If they instead opted to maintain a smaller, more balanced force or one oriented more toward air defense, their options could be more limited. Still it is highly unlikely that a postagreement Soviet air force would lose its capability to conduct at least a selective air and antiair operation.

Soviet writings already reflect the belief that precision-guided munitions reduce the need for large numbers of strike aircraft. Instead, the premium is on escort fighters, electronic countermeasures (ECM) aircraft, and defense suppression aircraft, all of which would be devoted to getting the smaller number of strikers through to their targets (much in the same manner as their Western counterparts).[24] It would not be surprising, then, to see them cut some less capable attack aircraft (such as Su-17s) while retaining most of their medium-range attack aircraft (Su-24s) and those useful in overcoming air defenses.

Hence, a CFE agreement, if properly

crafted, should lead to roughly acceptable force ratios, but it would be unwise to conclude that it would prevent Soviet counterair operations. The advantage will still be with the side that struck preemptively and could maintain a high sortie rate during crucial periods of the ground war.

In the area of defensive counterair (DCA), and with smaller forces, factors such as pilot skill and training would take on greater significance, which has traditionally been strongly in NATO's favor. However, a side effect of reduced tensions in Europe has been, and will probably continue to be, a drop in resources committed to defense and a corresponding drop in flight hours. Several nations (including Belgium and Denmark) have already slashed their average flight hours below the 15-hour/month NATO standard, while others are experiencing pilot shortages (Norway, the Netherlands, and again Denmark).

All of this is placed in the context of expanding airspace and training restrictions over Western Europe. By contrast, the Soviet aviators are averaging 12-13 hours of monthly flight time, and the quality of their training has undergone a marked improvement.[25] While probably not yet as so-

For its part, NATO does not believe carrier-based aircraft should be counted in CFE totals since the carrier task force has a worldwide mission and is not dedicated to NATO.

phisticated as that of NATO air forces, Warsaw Pact aircrew training may eventually decrease the flight skill superiority that NATO has enjoyed in the past. Thus, if NATO nations feel that a residual air capability is necessary at all, they must adequately maintain their level of training if this force is to have any use whatsoever.

Successful arms control may also mean less aircraft to cover the same amount of airspace, at least until reinforcements are well under way. There would also be less threat aircraft to worry about, but these would have the advantage of penetrating NATO's airspace at the time and place of their own choosing. This would make battle management systems such as the E-3 airborne warning and control system (AWACS) even more important, so that assets can be concentrated to cover the right threat axes at the right times and not respond to feints. Defensive sorties cannot be wasted, and "blue-on-blue" engagements can be afforded even less. Thus, the need for a clear air picture continues to suggest that a common NATO identification, friend or foe (IFF) system and the AWACS would still be a requirement for post-CFE air forces.

A dearth of usable aircraft may call into question NATO's ability to conduct a comprehensive offensive counterair (OCA) campaign. Once again, if the Soviets are able to keep V PVO aircraft unconstrained and be able to operate forward, the outcome of such a campaign could be doubtful.

In the aftermath of the Intermediate-range Nuclear Forces (INF) Treaty, NATO's most capable OCA aircraft also became, once again, NATO's prime assets for long-range nuclear delivery, which implies that many of them could be held back from conventional operations. If these aircraft numbers were drawn down to meet CFE quotas, even fewer would be available for counterair missions (once aircraft on nuclear alert were subtracted).

Likewise, a limited number of the specialized support package assets (such as F-111 Ravens, F-4G Wild Weasels, EC-130H Compass Call, etc.), which would be shared by both the Second Allied Tactical Air Force (2ATAF) and 4ATAF, are required for penetration of Warsaw Pact air defenses—both for OCA and interdiction missions. It would be important for United States Air Forces in Europe (USAFE) and NATO to preserve the countable aircraft in this category (F-4G/F-16 Fighting Falcon and EF-111) from cuts, since a more limited pool of actual attack aircraft would be unacceptably vulnerable to fast attrition without them.

A smaller force would need to be extremely combat efficient in its OCA campaign, as in other operations. Here again, the training required to make use of different aircraft from nations making up force packages would be crucial as long as these formations are considered the best means to penetrate hostile airspace. Yet, noise restrictions in the Federal Republic of Germany (FRG) and training cutbacks will probably continue to hinder the ability of NATO's air forces to practice large force operations (especially at low level).[26]

If less aircraft are available for this mission, timing and weaponeering will also become even more important. Former campaign options may be precluded, with a few well-timed pindowns of selected Warsaw Pact fields the best that can be expected.

Munitions would be needed to have a longer-lasting effect, since less revisits would be possible than before. Also, standoff weapons (such as NATO's modular standoff weapon—a program that is rapidly withering) would be extremely helpful in keeping attrition to a minimum.[27] If no such weapon becomes available and OCA assets are reduced significantly, the mission itself may become unviable.

Many of NATO's counterair requirements could be obviated, however, if Soviet forces were to reduce the number of airfields in Eastern Europe from which they operate (see fig. 3). This could come about either through a deliberate unilateral Soviet decision (which is unlikely for

now) or as a component of a conventional arms control agreement. The Soviet air forces operate from over 1,000 MOBs in the ATTU region, plus myriads of more austere fields to which their aircraft could be dispersed. NATO, on the other hand, has approximately 600 airfields, 130 of which have the hardened aircraft shelters and facilities necessary for proper wartime survivability.[28] It has been suggested that, should the Soviets decide to keep significant numbers of aircraft forward deployed, NATO could counter with CFE proposals to reduce the number of Warsaw Pact MOBs to match those of NATO, especially those nearer the inter-German border.[29] The agreement would have to require the Soviets to withdraw not only their aircraft but also all elements of their tactical logistics system, which would be critical to the readiness of FA units.[30] These arrangements would also need to be verified through on-site inspection.

In reply, the Soviets would almost certainly redouble their efforts to reduce Western offensive aircraft while maintaining that their exclusion of V PVO aircraft from official count is even more justified since they would be dismantling some of their forward air defenses. But this argument only becomes more convincing the farther east the Soviets withdraw their air infrastructure and the more NATO's OCA problems are eased.

Nevertheless, as long as Soviet aircraft are based in Eastern Europe, it is prudent to retain some offensive capability against Soviet airfields.[31] Still, deep penetration of any sort may lead to more aircraft attrition than NATO is ready to accept. Consequently, if Soviet aircraft in the groups of forces are thinned out and moved away from the interbloc boundaries, the OCA mission may become less urgent and thus receive less priority when scarce resources are allotted by NATO air commanders. If, on the other hand, the Soviets retain potent striking forces (such as Su-24s) in the FA and their air armies and strong support forces on fields in the German Democratic Republic (GDR) and Czechoslovakia, then NATO will probably continue its efforts to acquire a robust airfield attack capability.

Support of the Land Battle

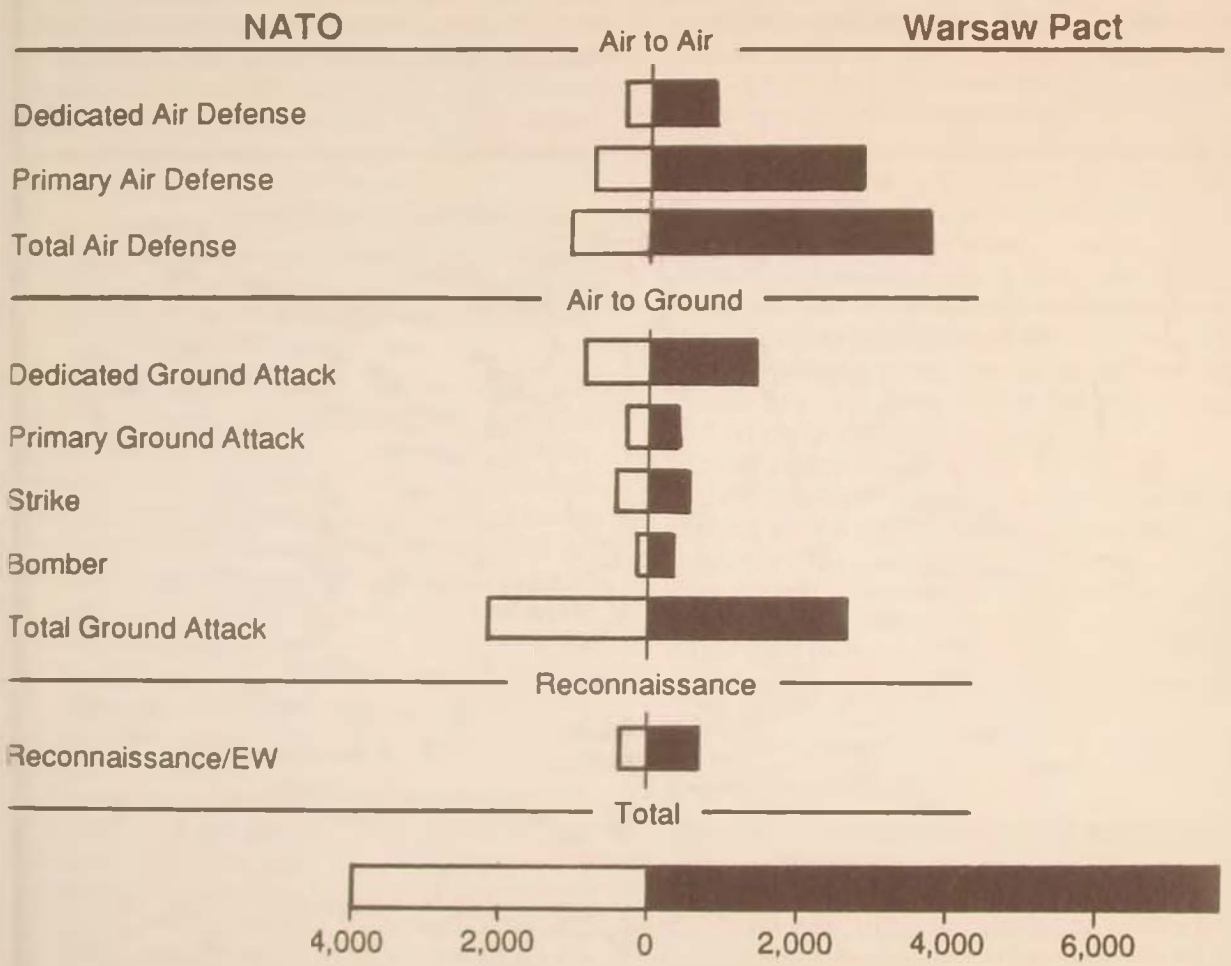
NATO's air forces contribute to the ground war by providing offensive air support (OAS)—consisting of close air support (CAS) and battlefield air interdiction (BAI)—and air interdiction (AI), and reconnaissance. They also provide airlift and special operations support, which will not be dealt with here.[32] CAS/BAI responsibilities grew from the need to support NATO ground forces in contact or imminent contact with Warsaw Pact forces, while deeper interdiction was designed to disrupt the Warsaw Pact follow-on forces, logistics nets, and command and control networks.[33]

Future requirements for OAS and AI will, as will the counterair mission, be affected by reductions in Soviet ground and air units. Between the possibilities of a reassertion of Soviet control over their NSWP allies (and the subsequent revitalization of their military capabilities) or a complete withdrawal of Soviet troops from Eastern Europe lies a broad range of contingencies. The most likely of these, resulting from a CFE agreement, would result in smaller, less heavy forces facing each other in Central Europe. Offensive Soviet actions, then, would require partial or full mobilization, actions that would alarm both NATO and NSWP governments alike. (And it is uncertain that the latter would even comply with a Soviet mobilization order.) Events seem to suggest that the Soviets would have to mobilize their own forces, either enforcing the compliance of their erstwhile allies or at least ensuring their noninterference, and only then would they be able to undertake forward operations—a tall order to say the least.

Nevertheless, the Soviets may still retain some options less taxing than an all-out push to the North Sea. Recent writings by Soviets seem to suggest that they no longer see a well-defined line between offense and defense in modern warfare. Instead, as

stated earlier, defensive operations can also include aggressive strikes into the enemy's depth either as an end in themselves or as a prelude to counteroffensive operations.[34] One of their options is to seize a politically or militarily significant piece of territory, dig their forces in, and then allow a NATO counterattack to "break its teeth" trying to eliminate the salient (as Israel attempted to do in the 1973 Yom Kippur War).

Nevertheless, any Soviet operation should, in present circumstances, give NATO forces time to react; a CFE agreement should improve this even more. If this remains the case, the opening battles of any future war may well be meeting engagements between covering forces that are attempting to gain an initial advantage while, in their strategic rears, both alliances scramble to mobilize and reinforce their positions. This may affect the way re-



Source: Phillip A. Karber, *Implications of the Gorbachev Reductions for Conventional Arms Control*, presentation to the North Atlantic Assembly, 29 May 1989 (rev. 18 August 1989) (McLean, Va.: BDM Corporation, 1989), 42.

Figure 2. NATO-Warsaw Pact Inventory Comparisons.

duced NATO air forces can influence the ground war.

Close Air Support

In the 1980s thinking about the CAS mission underwent a change.[35] The perennial problems of target acquisition and surviving the constantly improving Soviet battlefield air defenses (fig. 4) seemed to suggest that dedicating aircraft solely to the CAS mission was not the best use of limited fixed-wing assets. There would be times on the battlefield when CAS would be needed (e.g., during times of maximum battlefield fluidity, such as a breakthrough situation).

Consequently, the best solution seemed to be the acquisition of multirole aircraft (such as the A-16) that could, when needed, perform this mission in cooperation with helicopters and ground-based weapons.[36] Thus, it was natural for NATO to include aircraft suited for little other than CAS (A-10s, Alpha jets, G.91s) in its list of aircraft slated for cuts or cascading. Instead, some air forces, at least in the Central Region, are concentrating on BAI, where target arrays (columns) are more concentrated, making them easier to acquire and attack. The combined fixed-wing and helicopter team concept, effective as it may be, could be disrupted if both platforms are subjected to deep CFE cuts, leav-

Source: Anthony H. Cordesman, *NATO's Central Region Forces* (London: Jane's Publishing Co., Ltd. 1988), 21

Figure 3. NATO and Warsaw Pact Air Bases in the Forward Area of the Central Region.

ing ground commanders with insufficient support when they actually do need it. The demand for CAS could be quite strong after CFE cuts, as aircraft tasked with the mission are used as an operational reserve, covering gaps between noncontiguous units.[37]

Air Interdiction

Since any future Soviet action in Europe would require reinforcement from the western military districts of the USSR, effective air interdiction could pay handsome dividends. What remains to be determined, however, is how such an effort should be conducted by less assets.

To be effective, AI activities should be in sync with events on the ground. To that end, current NATO practice, in the Central Army Group, Central Europe (CENTAG), at least, is described as follows:

> Almost all AI target selection is done at army group headquarters, and almost all BAI target selection is done at the corps. But COMCENTAG prioritizes BAI targets across corps/army group boundaries.[38]

With the introduction of the multiple launch rocket system (MLRS) and the Army tactical missile system (ATACMS), ground units are increasingly able to cover many targets deep within the corps sectors that previously could only be reached by aircraft. If less assets are available in the future, the division of labor currently being established between army and air force staffs can allow proper concentration of AI assets on prearranged areas and targets, with only minimal overlap with ground systems.[39]

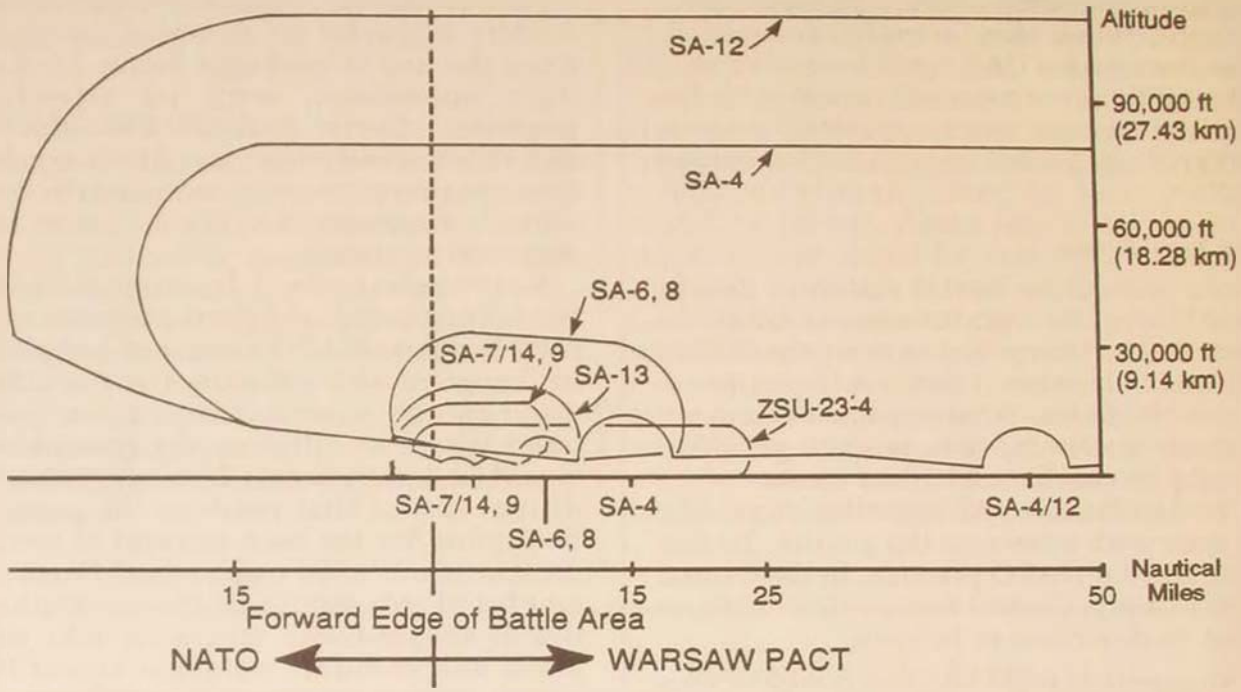
The reduced post-CFE force would face a surface-to-air threat little diminished over the present one. The Soviets, in an effort to combat NATO's follow-on forces attack (FOFA) concept (of which BAI and AI are integral parts), have stated their intention to augment existing air defenses, as well as relying on ECM to blind NATO reconnaissance systems such as the joint surveillance and target attack radar system (JSTARS) that would be vital for targeting both ground- and air-delivered strikes.[40]

As was the case with OCA missions, the density of Soviet air defenses would require the use of packaged forces for daylight operations, with its attendant problems. Soviet lookdown/shootdown and airborne early warning (AEW) capabilities are also improving, reducing the low-altitude sanctuary NATO's air forces had previously enjoyed.

Nevertheless, these are not new problems. They only highlight the need to carefully husband NATO's reduced inventory in the event of hostilities, since attrition could quickly wear this force down to the point where its effect on the ground war would be insignificant. To avoid this condition, tactics that produce the greatest disruption for the least amount of sorties must continue to be emphasized. Some examples of this would be the widespread use of sensor-fuzed mines for BAI missions and standoff weapons across the board, and an emphasis on night operations. The bottom line is that some sort of sanctuary must be found wherever possible, allowing NATO aircraft to go over, under, or around threat weapons' envelopes. These are not new ideas by any means, and in most cases only involve a continuation of current practices. Even with a reduced number of aircraft, NATO forces should still be able to conduct an effective interdiction campaign. Success, in the end, would be measured by how well such operations impeded Soviet forces as they tried to come into contact with NATO forces at the forward edge of the battle area (FEBA).

Reconnaissance

The first indications NATO would have that any agreement was being violated would be through a variety of sensors, not the least of which would be NATO's own reconnaissance (recce) systems such as the TR-1 or eventually the E-8. As events unfolded, these would be joined by tactical recce assets such as RF-4 Phantoms and Tornadoes. Together with other systems, these aircraft form the surveillance net NATO would need to transition from a



Source: David C. Isby, *Weapons and Tactics of the Soviet Army* (London: Jane's Publishing Co. Ltd., 1988), 308.

Figure 4. Soviet Army Mobile SAM/AAA Coverage.

peacetime footing back to a mobilized condition; if hostilities broke out, they would form a crucial targeting system. This would be the case with or without a CFE agreement. No matter what the course of arms control, reconnaissance assets will probably remain relatively untouched.[41]

Dual-Capable Aircraft

As CFE cuts come into effect, another protected category would be nuclear-capable aircraft. As long as NATO maintains an in-theater nuclear deterrent, and since any follow-on to the Lance surface-to-surface missile is delayed, NATO's tactical aircraft will be tasked with a nuclear-delivery mission. As stated earlier, it is likely that some of these aircraft would be unable to participate in a conventional battle, especially long-range assets such as F-111s and Tornadoes. As shown in table 3, however, there are several other types of aircraft able to carry out this mission, but it is increasingly uncertain that they would be used in this role, since their weapons would be released over the territory of NSWP countries, who would probably not be willing participants in a Soviet-initiated war. Consequently, less of these shorter-range aircraft would be needed as nuclear withholds. This, in turn, could mean that while their flexibility is increased, their usefulness to NATO commanders as a deterrent could be diminished. For the near term, however, all of NATO's nuclear-capable aircraft form an important component of its overall deterrent and of flexible response. The pace of change in Europe could still

cause this to change in the not-too-distant future.

Reinforcement Issues

If the Soviets were to abrogate a CFE agreement by attempting to reinforce their residual forces in Eastern Europe, then (theoretically) NATO reinforcement should begin to flow from the CONUS after the appropriate political decisions. This would serve as both a deterrent and as a means to bolster the reduced order of battle in the ATTU region in almost every mission area.

In practice, however, the process may not work so smoothly. Politically, it would be questionable whether all NATO governments would believe intelligence indicating a Soviet reinforcement effort into Eastern Europe and accede to NATO's own reinforcements until the situation was critical. It would be very difficult for NATO countries to accept with unanimity the idea that an era of reduced tensions might suddenly be coming to an end.

If this agreement were reached, CONUS-based wings would be among the most quick reacting of all rearward-based military assets, but problems would still remain. Redeploying squadrons would be competing for tanker and airlift support, and if the number of usable fields were reduced in the aftermath of CFE, they could find insufficient ramp space, hardened aircraft shelters, and maintenance facilities.[42] The end result could be major bottlenecks in the reinforcement effort unless problems were addressed beforehand.

Eventually, the Soviets could face the similar problem of recalcitrant allies unwilling to facilitate a redeployment forward of Soviet ground and air forces. As of now, however, they still face a much easier logistical problem and could easily reinsert aircraft into fields under their control, especially if this were done slowly by small flights of aircraft. For this reason, the Soviet calls for intrusive verification are probably crucial to the success of a CFE verification regime.

Conclusions

A CFE agreement along the lines of NATO's position would leave NATO air forces with the wherewithal to perform all traditional missions; the Soviet proposal, with its exemptions for important Soviet aircraft, would not. But even an agreement that would be to NATO's liking would still not mean that air and ground threats were eliminated; on the contrary, they could remain viable, if not likely. It also means that priorities would have to be imposed on its force structure and missions. At first glance, post-CFE air forces may not appear to look or operate that much differently than they do now, but there will be several shifts in emphasis.

As always, one of the first priorities will be to retain aircraft that can perform the nuclear strike mission, at least as long as the alliance decides that such weapons are necessary to deter war in Europe. Next, the reconnaissance mission and the associated aircraft, needed to ensure compliance with any treaty and to alert NATO military and political authorities of any abnormalities that might precede hostilities, would receive priority.

The first threat that NATO would probably face in the event of a war would be air attacks on its air bases and other targets in its rear areas. As shown, Soviet residual forces would still be capable of carrying out these missions under all current proposals. They, too, would have to prioritize the activities of their reduced forces, but they would still be able, at least theoretically, to conduct an air and antiair operation suitable to cover their ground operations. The contributions of NSWP air forces is questionable, but they could still be used to assert airspace sovereignty in both directions.

For this reason, DCA capabilities, embodied in aircraft such as the F-15 Eagle and the Tornado F-2, would receive a greater priority among wartime missions. As a result, the air-to-air picture after CFE could look very similar to what it was before an agreement.

An unreinforced attack by a smaller Soviet force remaining after an agreement would probably not present an unmanageable threat if NATO's residual forces reacted in time. A moderately reduced force of CAS/BAI aircraft would be sufficient to support the initial ground war provided they had immediate support from specialized suppression aircraft. As more Soviet ground formations are committed, and as their battlefield air defenses become denser and interconnected, NATO can expect greater attrition in this group of aircraft, which will require timely replacement. OCA requirements will probably develop slowly, as Soviet aircraft reenter their Eastern Europe fields and begin operations. Arrayed against these offensive missions, Soviet integrated air defenses will remain formidable, at least as long as Soviet ground formations remain in Central Europe. Improved SAM systems (SA-10/-11/-12, 2S6, etc.), aircraft with good maneuverability and lookdown/shootdown capabilities, and supporting C^2 systems will all remain in place in meaningful numbers after an agreement. Only the NSWP contribution might be in the process of significant change. Thus, after CFE, the ability of NATO to project offensive air power against Warsaw Pact forces and installations may actually be somewhat degraded after the initial stages of any future conflict, provided it does not begin an appropriate reinforcement effort or does not have the proper infrastructure to support such an undertaking.

Most likely scenarios, then, involve a peaceful yet evolving Europe so that deterrence, verification, and initial air defense will most probably dominate the force structure of NATO air forces, followed by aircraft actually needed to prosecute a developing, mobile ground war.

Whatever the outcome, NATO's military forces will develop first and foremost according to the dictates of political events in Europe and budgetary circumstances. With war in Europe appearing most unlikely in the near term, defense budgets will undoubtedly continue to fall, both to the west and east of the interbloc borders. Consequently, the air forces with which NATO enters the twenty-first century may, in the final analysis, be capable of providing little more than a ragged air defense. Nevertheless, the possibility of a major turnabout in Europe's strategic environment (perhaps from major upheavals in the USSR) cannot be discounted. With this in mind, most nations will probably retain at least a small, flexible force for use in the skies over an uncertain Europe. □

Notes

1. Soviet CFE negotiator Oleg Grinevsky quoted in John D. Morrocco, "Vienna Talks Trigger NATO Air Force Review," *Aviation Week & Space Technology*, 30 October 1989, 36.

2. Morrocco, "Vienna Talks," 36; Michael Gordon, "U.S. Weighs Limiting Arms Agenda," *New York Times*, 7 November 1989, 15; John W. R. Lepingwell, "Soviet Air Defense and the Stealth Challenge," *International Security* 14, no. 2 (Fall 1989): 76–77.

3. R. A. Mason, "Airpower in Conventional Arms Control," *Survival* 31 (September/October 1989): 405; Oliver Debouzy, "The Balance of Air Forces in Europe—The Devil Is in the Details," *NATO's Sixteen Nations* 34, no. 6 (June 1989): 52; Gen John Galvin, "A Strategy for the Future," *Royal United*

TABLE 3

NATO NUCLEAR-CAPABLE TACTICAL AIRCRAFT*

Aircraft	*Combat Radius (nm) (optimum profile)*
F-111D/E/F	945
F-4D/E	454
F-16C	502
CF-18	400
Mirage IIIE	518
Mirage 2000N	373
Jaguar A	459
Tornado IDS	750

*Land-Based Only.

Source: International Institute for Strategic Studies, *The Military Balance 1989–1990* (London: IISS, 1989), 217–20.

Services Institute [RUSI] Journal 134, no. 4 (Autumn 1989): 17.

4. Mason, 409.

5. Part of a comprehensive verification proposal offered in October 1989.

6. There are approximately 115 Tu-26 Backfires assigned to the Smolensk air army. The International Institute for Strategic Studies, *The Military Balance, 1989–1990* (London: IISS, 1989), 41, 229. SNA contributions to the land battle were discussed in a 1982 article by Polish colonel A. Musial, analyzed in Phillip A. Peterson and Maj John R. Clark's "Soviet Air and Antiair Operations," *Air University Review* 17, no. 3 (March–April 1985): 36–54.

7. Mason, 408-9; Debouzy, 50.

8. See Gen Sir Geoffrey Howe, "Alliance Defense of the Northern Flank," *NATO's Sixteen Nations* 133, no. 12 (December 1988): 13–18.

9. Mason, 411. For a description of increasing airmobility, see Klaus Naumann's "The Restructured Bundeswehr," *NATO's Sixteen Nations* 34, no. 10 (October 1989): 34; and Harold S. Orenstein, "Warsaw Pact Views on Trends in Ground Force Tactics," *International Defense Review* 22, no. 9 (1989): 1149.

10. Soviet defense intellectuals writing in the USSR Academy of Science's *Disarmament and Security 1987 Yearbook* basically agreed with NATO's position on the question of regional sublimits. Phillip A. Karber, "The Military Impact of the Gorbachev Reductions," *Armed Forces Journal International*, January 1989, 63.

11. Morrocco, "Vienna Talks," 36.

12. John D. Morrocco, "NATO Weighs Air Force Modernization in Light of Conventional Arms Cuts," *Aviation Week & Space Technology*, 24 July 1989, 29–30.

13. Morrocco, "Vienna Talks," 36. Affected aircraft would be Alpha jets (West Germany), F-104s (Italy, Turkey), F-100s (Turkey), G.91s (Italy, Portugal), RF-84s (Greece), Mirage F-1s (Greece), A-7s (Portugal), NF-5s (the Netherlands). The US contribution could be all or part of its 108-strong A-10 force in Europe. Morrocco, "NATO Weighs Air Force Modernization," 30.

14. Quoted in Gordon, 15.

15. Klaus Wittman, "Challenges of Conventional Arms Control," *Adelphi Papers*, no. 239 (London: IISS, 1989), 53.

16. See comments by John D. Steinbrunner for the first argument and Barry Blechman for the second in "Breaking with Convention: The New European Force Talks," *Arms Control Today* 19, no. 3 (April 1989): 3–9.

17. For a discussion of this "statute," see John Yurechko, "Soviet Reinforcement and Mobilization Issues" in *NATO-Warsaw Pact Mobilization*, ed. Jeffrey Simon (Washington, D.C.: National Defense University Press, 1988), 57–97.

18. Warning times and quote in Phillip A. Karber, "The Implications of the Gorbachev Reductions for Conventional Arms Control," presentation to the North Atlantic Assembly, 29 May 1989 (rev. 18 August 1989), 16–17.

19. The description of these operations is drawn primarily from Phillip A. Peterson and Maj John R. Clarke, "Soviet Air and Antiair Operations," *Air University Review* 17, no. 34 (March–April 1985): 36–54.

20. "Changing Tactics in Air Power," *Jane's Defence Weekly*, 16 April 1988, 754.

21. Robert Hall, "The Ground/Air Interface," *Jane's Soviet Intelligence Review*, July 1989, 326–27.

22. V. G. Reznichenko, quoted in Harold S. Orenstein's "Warsaw Pact Views on Trends in Ground Forces Tactics," *International Defense Review* 9 (1989): 1149.

23. They would also need to have trainers exempted from counting or have them readily available to convert to a combat role.

24. "Soviet Air Force Studies New Bombing Tactics," *Jane's Defence Weekly*, 26 August 1989, 354; "Air Force Studies Changing Tactics," *Jane's Defence Weekly*, 10 June 1989, 1168.

25. Debouzy, 55. The importance of realistic, sustained training to NATO's overall air capabilities is stressed in Gen William Kirk's "Air Superiority in the Central Region," *NATO's Sixteen Nations* 34, no. 3 (1989): 21.

26. A good description of the complexities of these operations can be found in Maj Bob George and Maj Lonnie Goodson, "Planning, Leading, and Executing a Large Force Package: The Gorilla Lives," *USAF Fighter Weapons Review*, Summer 1985, 5–8.

27. Current runway-busting munitions include the French-US Durandal (which lacks any type of antirepair mine) and the British JP-233 and German MW-1 submunition dispensers (respectively). All require the overflight of a heavily defended target, as would the US Air Force's troubled direct airfield attack combined munition (DAACM). Benjamin F. Schemmer, "Stronger Warsaw Pact Runways Cause USAF to 'Cancel' Airfield Denial Weapon," *Armed Forces Journal International*, August 1989, 22.

28. Debouzy, 52.

29. Mason, 410.

30. See Richard A. Ward, "Readiness, Soviet Style," *Air Force*, March 1989, 50–55, for a description of the Soviet logistics system.

31. Also expressed by General Kirk, 19.

32. David C. Isby and Charles Kamps, Jr., *Armies of NATO's Central Front* (London: Jane's Publishing Company Limited, 1985), 35.

33. James P. Kahan, "Air Support in CENTAG Deep Operations," *Military Review* 69, no. 8 (August 1989): 65, 68–69.

34. Orenstein, 1152; Mary C. Fitzgerald, "The New Quality of Soviet Defense," *International Defense Review* 22, no. 10 (1989): 1305–6.

35. See Lt Col Price T. Bingham, "Dedicated Fixed-Wing Close Air Support—A Bad Idea," *Armed Forces Journal International*, September 1987, 58–62. See also Air Vice-Marshal John Walker, "The Conundrum of Air-Land Warfare," *RUSI Journal* 133, no. 3 (Summer 1988): 19–20.

36. See John A. Warden, *The Air Campaign* (Washington, D.C.: Pergamon-Brassey's, 1989), 97, for a discussion of CAS.

37. Warden, 96.

38. Kahan, 72–73.

39. Current German arrangements include army responsibility out to 75 kilometers with the air force taking responsibility for targets beyond that range. Deconfliction of US Air Force and US Army systems has been under way, with the Air Force expected to cover most deep targets. See John D. Morrocco, "West Germany Eyes Larger Air Force Role in Ground Support," *Aviation Week & Space Technology*, 30 October 1989, 39; Glenn W. Goodman, "New Airborne Sensors Look Deep, Allow Army/USAF to Strike Deep," *Armed Forces Journal International*, January 1989, 86.

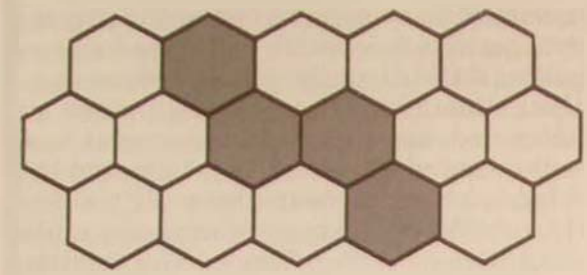
40. Peter Adams, "Soviets Plan Electronic Air Defense Counter to FOFA," *Defense News*, 16 October 1989, 38, quoting Frunze Academy commandant General Colonel Vladimir Kontchits.

41. John D. Morrocco, "Importance of USAF Modernizations to Grow Following Force Reductions," *Aviation Week & Space Technology*, 30 October 1989, 37.

42. As is the case at the collocated operating bases now. Anthony H. Cordesman, *NATO's Central Region Forces* (London: Jane's Publishing Company Limited, 1988), 246.

WAR GAMING
THINKING FOR THE FUTURE

LT COL DAVID B. LEE, USA



To be prepared for war is one of the most effectual means of preserving peace.

—George Washington

War is chaotic, full of unknowns, and governed by chance. It can be mastered only through practice, and the best practice is combat experience. Today's airmen, however, lack the campaign experience of their predecessors. Indeed, World War II and Korean warriors are all but extinct, and even the ranks of combat-experienced officers from the Vietnam era are thinning.

Tactically, our Air Force pilots and support personnel are second to none. Training almost constantly, they have honed specialty skills to a fine edge. Yet, can the same be said of officers involved in directing the application of air power? Air power is a theater asset, distinguished by speed, range, and flexibility. But theater-wide exercises are costly, both in terms of time and resources. Because field and command-post exercises are threatened by proposed cuts in the defense budget, the prospects for training officers in the art of employing air forces are not good. Further, host nations are apprehensive about the United States conducting air activities over their territory, especially in light of the rash of aircraft accidents in Western Europe over the last few years. Additionally, environmentalists concerned about the effect of military exercises on the environment constantly urge a curtailment of large-scale maneuvers.

What can be done during peacetime to train and educate our current and future leaders for wartime air campaigning? War games can help. This article reviews concepts of war gaming and its historical developments. It also considers the advantages of war gaming, as well as its limitations and pitfalls.

History of War Gaming

The *Department of Defense Dictionary of Military and Associated Terms* defines a war game as "a simulation, by whatever means, of a military operation involving two or more opposing forces, using rules, data, and procedures designed to depict an actual or assumed real life situation."[1] The war game has been around almost from the time combat began. The oldest and best-known war game is chess. Although its origin is unknown, most people agree that chess developed from the Indian game "Chaturanga," which used a standard map and pieces representing the arms of the day (e.g., elephants, infantry, cavalry, etc.). It was played by four people according to fixed rules.[2]

In 1664 Christopher Weikhmann of Ulm, Germany, developed a warlike game called the "King's Game." It had 30 pieces per side and 14 distinct moves. About 120 years later, Helwig, master of pages to the Duke of Brunswick, devised a game whose playing pieces represented entire military units (e.g., infantry, cavalry, heavy and light artillery, etc.) rather than individual soldiers.[3] The playing board consisted of 1,666 squares, each colored to represent a particular type of terrain. The most notable of the chess-like games of the eighteenth century was "*Neue Kriegsspiel*," developed by Georg Vinturinus. It featured a game board of 3,600 squares depicting the terrain between France and Belgium, troop lists containing 1,800 units of various arms, and a 60-page rule book including new rules for reinforcements and logistics.[4]

The next round of improvements was made in 1811 by von Reisswitz, a Prussian military official. In his game, the chessboard was eliminated in favor of terrain modeled with sand. Troops, now represented by colored blocks of wood, were no longer confined to chessboard squares but were permitted to move freely about, based on their capabilities.[5] Von Reisswitz's game was further developed by his son, a lieutenant in the artillery of the Prussian Guards. The younger von Reisswitz replaced the sand table with a large-scale map. In addition, he revised the rules of the game to more closely resemble combat of the times[6] and invented the red and blue color coding for sides, which continues in war games today. Finally, the younger von Reisswitz's game used an umpire to settle disputes and determine casualties. Communication delays, limited intelligence, and rates of maneuver as well as the above innovations were covered in a rule book entitled *Instructions for the Representation of Tactical Maneuvers under the Guise of a War Game.*[7] The younger von Reisswitz's efforts caused the then chief of staff of the German army, Karl von Müffling, to exclaim, "It's not a game at all, it's training for war. I shall recommend it enthusiastically to the whole army!" And he did.[8]

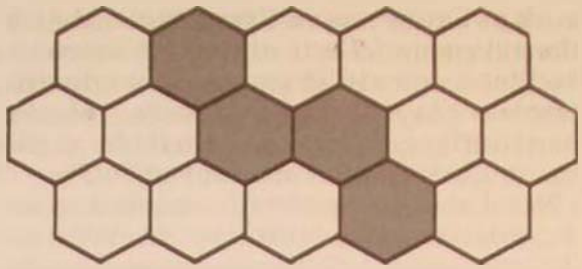
As rules became more complicated and battlefield experience more common, a

Pearl Harbor, 7 December 1941. The USS Arizona, *shown here on fire, became perhaps the most famous victim of war gaming. Prior to hostilities, the Japanese perfected shallow-water torpedo attacks during war games that were designed to simulate an assault on Pearl Harbor.*

group of Prussian *Kriegsspiel* officers began to agitate for "reforms." In 1874 Klement W. von Meckel and Col Julius von Verdy du Vernois argued that umpires should not render decisions based on rules but on tactical experience. They further argued that the randomness of games should be eliminated because game results should reinforce proven tactics.[9] In von Verdy's book *War Game*, published in 1877, he proposed to eliminate the written rules and govern opponents by tactical rules which would become obvious during the course of the game.[10] These reformists produced a basic dichotomy in war games still present today: rigid games whose outcomes were based on rules versus free games whose outcomes were based on umpire expertise.

Germany continued to use war games as a resource for training military officers on how to think about warfare. They were especially important tools in the aftermath of World War I, when ceilings on both manpower and spending were placed on the German army.[11] Germany went so far as to require each regimental officer to devote one evening a week to war gaming. Game play continued well into World War II and was used to think through many campaigns.

Other countries began to try out war games in the late 1800s. The British started informal gaming that used German rules in 1872 and, acting on a directive issued by the Duke of Cambridge, formally adopted war games in 1883.[12] Each military district in England had its own war games. These games used some large-scale campaign as a backdrop, with part of the action occurring in the players' own military districts. From there, individual garrisons confronted military problems of attack and defense.[13] Games were also used to illustrate military history and geography.[14] Unfortunately, the British adopted the most rigid of the war-game rules for training, and when the Boers did not abide by them during the second Boer War (1900–1902), the British dropped the whole concept of war gaming for some 50 years.[15]



Japan appears to have adopted war gaming during the same time as the Europeans, although no definite date can be established. Works from von Meckel were translated into Japanese and used throughout the Japanese army and the Japanese war college.[16] The victory that Japan enjoyed over Russia in 1904 was attributed, in part, to war games.[17] The Japanese "gamed" the Midway campaign as well as the raid on Pearl Harbor—the latter in the presence of the actual carrier task force commander, Vice Adm Chuichi Nagumo.[18]

US experience in war gaming began late in the nineteenth century. Maj W. R. Livermore of the Army Corps of Engineers is credited with producing the first major US military war game. His game, called "American *Kriegsspiel*," was based on the works of German war gamers von Meckel and von Verdy.[19] Published in 1879, Livermore's version allowed tactical, grand tactical, strategic, fortress, and naval play[20] on a map with 10-foot contours and drawn on a scale of 12 inches to the mile.[21] Livermore modified German war-gaming methods by giving each side incomplete information on the opponent's position and deployment.[22] However, play followed a rigid format since combat-seasoned umpires—required for free games—were virtually nonexistent in the United States. Livermore hoped that his game and innovations would simplify and speed up play, but by 1898 he had to conclude that the time required to master the rules offset any timesaving features in the game itself.[23]

US Army gaming activities continued through World War II, based on the 1908

work of Capt Farrand Sayre, entitled *Map Maneuvers and Tactical Rides*.[24] Sayre introduced one-sided games, whereby the umpires played opposing forces; plastic map overlays; and grease pencils for marking unit information and movement.[25]

Naval war games were introduced to the United States in 1887 by Lt William McCarty Little (USN), who lectured on the concept of chart maneuvers at the Naval War College.[26] This variation on war gaming became a regular part of the Naval War College curriculum in 1894[27] and had two levels of play: strategic and tactical.[28] In the strategic game, forces were deployed to detect the enemy fleet, relying heavily on patrols and naval screens. In the tactical game, fleets maneuvered to obtain the best position to destroy the enemy. Over 300 naval war games were played at the Naval War College between 1919 and 1941.[29]

The US Air Force's war-gaming experience began in the 1950s and, until the late seventies, was limited to the professional military schools of Air University.[30] During the seventies, Air Force war gaming was divided between Air University, United States Air Forces in Europe, Tactical Air Command, and US Readiness Command. But in 1984 the Headquarters US Air Force Wargaming Review Group was established to ensure a cohesive Air Force approach in satisfying operational wargaming systems requirements.[31] As a result of the group's findings that year, the Directorate of Operations for the Air Force Deputy Chief of Staff, Plans and Operations was made the executive agent for Air Force war-gaming policy, requirements, concepts of operation, and budgets. The same year saw the creation of the Air Force Wargaming Center at Maxwell AFB, Alabama, whose mission is to plan and conduct war games in support of USAF educational and operational requirements. Additionally, the center was chartered as the Air Force war-gaming clearinghouse and the technical focal point on war gaming for the Air Force. Two other wargaming organizations were also placed under the auspices of the Air Staff: (1) the Warrior Preparation Center, created in 1982 and located at Einsiedlerhof Air Station, Federal Republic of Germany, and (2) the 4441st Tactical Training Group (commonly known as Blue Flag) located at Hurlburt Field, Florida.

Commercial computer war games were developed in the early 1980s, one of the first of which was "Tanktics," published in 1981. This game simulated a tactical tank battle, with a human pitted against the computer. While the computer resolved hidden movement and combat, the human player entered direction, movement, and firing orders for friendly tanks. Since computer graphics were not very good, the human player visualized friendly and enemy forces with a hexagonal map board and cardboard chits. Since then, these games have vastly improved, both graphically and substantively, as the power of the personal computer has increased. Game scenarios range from antiquity to World War III and beyond.

Advantages of War Games

The first and foremost advantage of war games is that they make people think about war. Players can test their skills in the art of making decisions that affect thousands of people, despite the paucity of information (Clauswitz's famous "fog of war").[32] One example of such thinking is the evolving strategy of the US Navy during the interwar years: the concepts of aircraft carrier-based fleet engagements and "island hopping" were developed from war games played at the Naval War College.[33] Adm Chester W. Nimitz acknowledged the usefulness of war games in a letter to that institution: "The war with Japan has been [enacted] in the game room here by so many people and in so many different ways that nothing that happened during the war was a surprise—absolutely nothing except the kamikaze tactics towards the end of the war; we had not visualized those."[34] Furthermore, Germany's

Adm Chester W. Nimitz was a solid supporter of war games, played throughout the interwar period at the Naval War College. He believed that they made a significant contribution to the US naval effort in the Pacific.

tactical expertise on the battlefield during World War II was attributed to the use of war games in the education and training of its officers.[35]

Second, war games can be used to investigate new ideas without risking the lives of soldiers, sailors, and airmen. For example, the use of light aircraft carriers and battleships in coordinated landings was gamed at the Naval War College some 15 years before the actual landings,[36] and the Japanese—in their gaming of Pearl Harbor—developed tactics for delivering a torpedo attack in shallow harbor waters.[37]

Third, war games can provide a less expensive alternative to command-post and field exercises, which have casts of thousands and are used to check command and control procedures and unit employments.[38] Further, war games allow commanders to run a campaign plan repeatedly without actually expending resources and causing unit fatigue.[39] For example, the American crossing of the Roer River in World War II was gamed many times without subjecting troops to hostile fire. When the actual operation took place, virtually nothing came as a surprise.[40]

Fourth, hours of boredom sprinkled with moments of terror are a reality of the battlefield, and critical decisions are often made during the moments of terror. But time can be compressed or expanded during war games to focus on campaign issues and discuss available options. The hours of boredom can be disposed of in a tick of the clock.

Fifth, any location in the world can be the setting for a war game. Since battles are fought over maps rather than actual territory, they do not affect treaties, international relationships, peacetime safety restrictions, or the environment.[41]

Limitations of War Games

War games, despite their many virtues, are not a low-cost, universal solution. Because of their limitations, they supplement, but do not replace, other training techniques.

First, war games do not match reality. Most of the functions of war, ranging from the movement of ground troops to the positions of reconnaissance satellites, can be approximated to some degree, but the model can never predict exactly what would occur in a real conflict. Furthermore, many important aspects of battle, such as human relations and mechanical failures, cannot be satisfactorily quantified or simulated in a game.[42]

Second, war games do not convey the threat of death that is prevalent on the battlefield. And losing or inappropriate play does not call down the severe penalties (dismissal, court-martial, execution, etc.) that accompany failure. Since physical

threats are not real, players may not react the same way in a game as they would in real life; that is, they may be more complacent or more aggressive than in actual combat.[43] Other people may play the game to reach the "school solution" or to appease the game sponsor. The German army made sure that an officer's promotion was never based solely on the results of a war game, using the latter as only one of many indicators of performance.[44]

Third, war games are not as inexpensive as they may appear. A good military game often takes a year or more to develop. For instance, specialists must research the topic, develop a plan of attack, construct necessary gaming materials, prepare briefings for participants, and write after-action reports. Others must design, play, and umpire the game (the number of umpires often equals or exceeds the number of players). The process also includes administrative aspects, such as message-traffic handling, audio-video projection, and supply functions. Further, if the war game uses computer support, computer specialists must program and operate the equipment.

In short, war games are the shadow of war and must be taken neither too seriously nor too lightly. Taken too seriously, war games can be considered predictive, a conclusion which history has shown to be false. Taken too lightly, they cannot serve the purpose for which they were made—training for war.

Pitfalls of War Games

War games help people learn how to think, but if players misuse or misunder-

One major tactic that war games did not envision was the use of kamikaze attacks on the US fleet. Below, a Japanese dive-bomber, hit by defensive fire, attacks the USS Essex.

stand them, they can be counterproductive. Regardless of their level of experience, players can succumb to certain pitfalls.

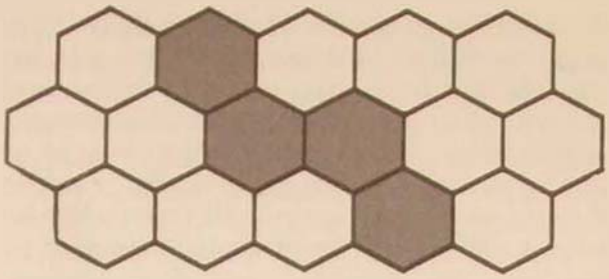
This Isn't Correct

Insisting that something about the game isn't right—probably the most common pitfall—reveals more about players than about the game itself. The complaint is especially prevalent when players are not doing well or actually have been defeated. At that point, they typically declare the war game to be in error and lose enthusiasm for continuing. This pitfall stems from their inability to deal with the environment portrayed in the game. Although understandable, this attitude is dangerous. Indeed, aspects of World War I did not meet the preconceived notions of some of the warring generals. Unfortunately, they were more than willing to continue fighting "the old-fashioned way" to the tune of several million casualties. Correctness counts after the war, and what is right or wrong can be proven only in the crucible of combat. Future wars will inevitably be fought differently from their antecedents, and the side flexible enough to accommodate change will probably win.

This Does/Doesn't Prove My Point

Another pitfall occurs when a war game produces an answer that the sponsor did or did not want. Using a war game to prove one's contention is a travesty of how the game should be used. War games are designed to raise issues, not settle them. Furthermore, rejecting the outcome of a game because the result does not fit one's

Below, the escort carrier USS Saint Lō *is hit by a kamikaze. War games are valuable, but they do not provide all the answers.*



preconceptions invites failure on the battlefield. The classic example of this pitfall is the Japanese gaming of the Battle of Midway.[45] During the game, an umpire determined that two Japanese aircraft carriers were sunk after a surprise attack by American aircraft. The chief umpire, Adm Matome Ugaki, fresh on the heels of the victories at Pearl Harbor, refused to believe such a "bizarre" result and overturned the lower umpire's ruling. One of the carriers was immediately resurrected, and the other returned later to support attacks on New Caledonia and the Fiji Islands.[46] This overturning of the results based on preconceptions disenchanted many of the junior officers at the game. Moreover, it provided a false sense of security to the senior officers—a feeling that eventually contributed to the Japanese defeat at Midway a few weeks later.

The Results Will Show Who Is Going to Win

Viewing the results of a war game as an infallible indicator of success constitutes the final pitfall. War games, as already noted, are not war and cannot duplicate the chance and often unrelated events of reality. Thus, they should not be considered predictors. One example is the Germans' Schleiffen Plan, probably the most gamed plan of its time. Troop movements were painstakingly calculated, train schedules scrupulously kept, and rates of supply and ammunition carefully determined. Unfortunately, the game did not take into account the fact that the French had the same capability as the Germans and were equally willing to use it. Thus, the rapid appearance of the French at the front came as a great surprise, upset the entire German plan, and resulted in a deadlock.[47] Another example is the previously mentioned comment of Admiral Nimitz. Although a multitude of possibilities had been war-gamed at the Naval War College, the admiral had to concede that Japan's use of the kamikaze came as a surprise.[48]

Implications for the Air Force

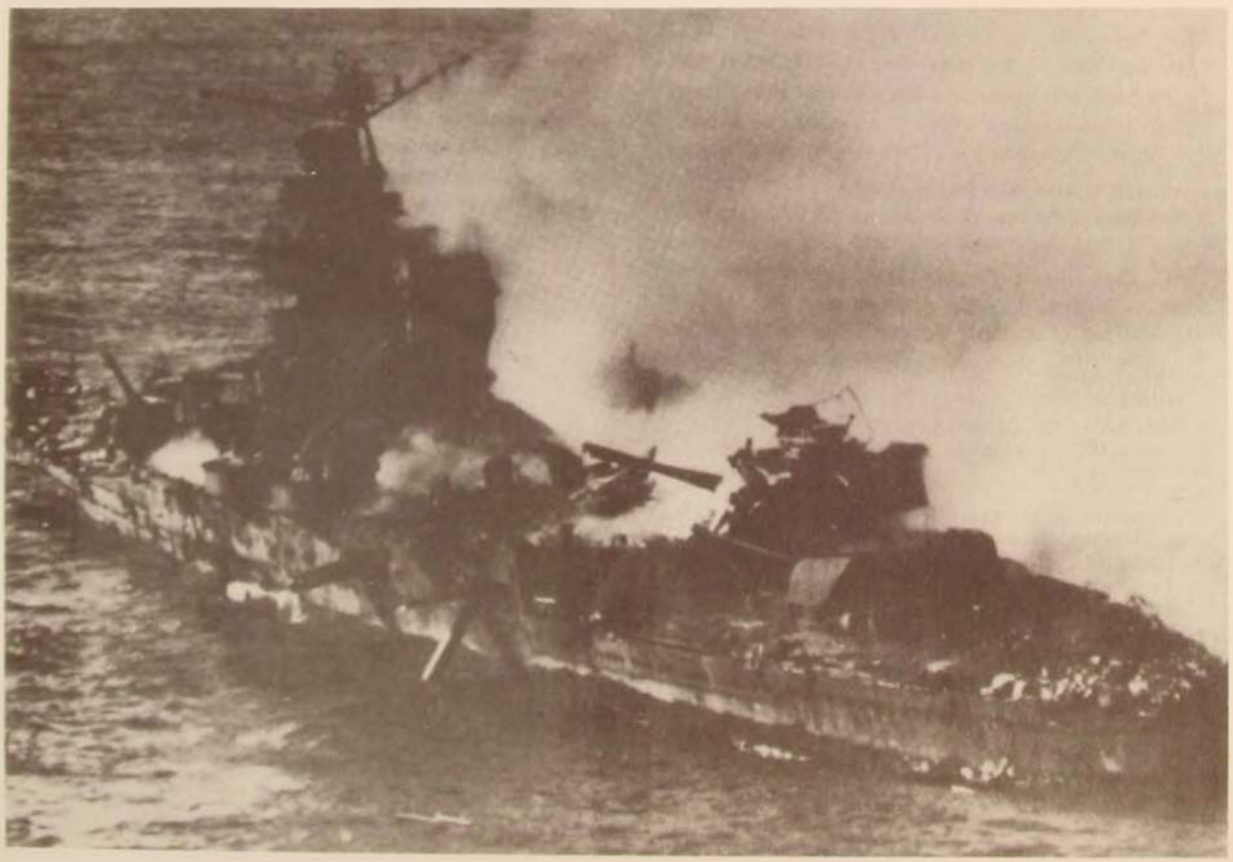
Can war games be of use to the Air Force? Yes! Airmen can benefit from them throughout their careers. For example, games can enhance novice airmen's study of military subjects. One Air Force Reserve Officer Training Corps instructor at the University of Pittsburgh uses war games to illustrate the Korean War, and his students show marked improvements in learning both the geography and the history of that conflict. In Air University's Squadron Officer School, students participate in games that cover operations of the tactical air control center and systems analysis. Air Command and Staff College students apply their classroom lessons about aerial warfare, ground combat operations, and strategic nuclear theory by playing war games. The Air War College uses games to further student understanding of campaign planning and air power employment. The Air University Center for Aerospace Doctrine, Research, and Education (AUCADRE) employs war games in its Joint Flag Officer Warfighting Course to educate senior officers in issues pertaining to unified commanders. Students in AUCADRE's Combined Air Warfare Course are exposed to general operating concepts in the central European theater through the use of a war-game exercise. And the Warrior Preparation Center uses war games to train in-place battle staffs for North Atlantic Treaty Organization (NATO), while Blue Flag trains battle

staffs for theaters such as Korea and Southwest Asia.

Is this enough? No! War games must be taken beyond the schoolhouses at Air University and into the field. Just as one cannot become a chess master in a single game, one cannot uncover all the intricacies of aerial warfare in a single war game. In the absence of real combat experience, war gaming should be used to season current and future leaders. Indeed, war games can be used creatively to examine or discover issues in any Air Force job or area, such as air base operability and air base security. Results that show promise can then be verified through field tests and exercises.

If war games are to be implemented successfully, Air Force leaders must make a personal commitment to their use and success. Commanders must insist that the right people—and not their surrogates—exercise their thinking in the area of war fighting. Failure to do so can result only in confusion and eventual defeat. In addition to having the right people participate in games, commanders must ensure that the proper personnel and resources are used to

The Japanese heavy cruiser Mikuma. *destroyed at Midway. During the Japanese war game of the Battle of Midway, an admiral refused to accept a ruling favorable to the Americans and ordered the game umpires to change their decision. Using war games to prove a point is a dangerous (and potentially lethal) misuse of these exercises.*



design, develop, and produce them. This is not to suggest that war games should rely on large computer systems and glitzy graphics. The use of high technology must depend on the objectives of the war game, its audience, and available resources.

Is the Air Force falling into any of the pitfalls of war gaming? Sometimes. Players may succumb to the "this isn't correct" pitfall, especially if things do not go according to plan or if they are embarrassed because of their bad decisions. Since no one wants to look bad in front of subordinates or superiors, the war game, controllers, and umpires make excellent scapegoats. The "this does/doesn't prove my point" and "the results will show who is going to win" pitfalls have not yet affected the Air Force, although it is only now considering using war games on a wide scale. In time, the Air Force will become more susceptible to these two pitfalls, especially when advocates seek support for their pet programs or missions.

Summary

The thoughtful application of air power is just as important as new hardware on the ramp. Therefore, in light of the dwindling number of combat-experienced veterans, declining defense budgets, and increasing environmental concerns, the Air Force must carefully consider the role of war games in the evolution of air strategy and doctrine. Just as the advantages of war games are great, so is the potential for their abuse. The greatest danger lies in attempts to use them to prove points or to predict the future. History shows that people who have tried to use war games for these purposes have lost far more than a game. However, by paying strict attention to the purpose of war games and by critically examining the issues and concepts they provide, the Air Force can use them, as W. McCarty Little said, "to provide the right thing, rightly applied, and in time."[49] □

Notes

1. Joint Chiefs of Staff (JCS) Publication 1, *Department of Defense Dictionary of Military and Associated Terms* (Washington, D.C.: Government Printing Office, 1 June 1987), 393.
2. Col Paul S. Deems, "War Gaming and Exercises," *Air University Quarterly Review* 9, no. 1 (Winter 1956–1957): 99; J. K. Hjalmarson, "The Development of War Games," *Canadian Army Journal* 15, no. 1 (Winter 1961): 5.
3. Andrew Wilson, *The Bomb and the Computer* (New York: Delacorte Press, 1968), 3.
4. Theodore E. Sterne, "War Games: What They Are and How They Evolved," *Army* 16, no. 3 (March 1966): 44.
5. Wilson, 4.
6. Ibid., 5.
7. Deems, 162.
8. Wilson, 6.
9. Ibid., 8.
10. Edgardo B. Matute, "Birth and Evolution of War Games," *Military Review* 50, no. 7 (July 1970): 53.
11. Hjalmarson, 8.
12. Farrand Sayre, *Map Maneuvers and Tactical Rides*, 5th ed. (Springfield, Mass.: Press of Springfield Printing and Binding Co., 1911), 5.
13. Ibid., 21.
14. Ibid.
15. M. R. J. Hope Thompson, "The Military War Game," *Journal of the Royal United Service Institution* 107, (February-November 1962): 50.
16. Sayre, 25.
17. Ibid.
18. Thomas B. Allen, *War Games* (New York: McGraw-Hill Book Company, 1987), 74.
19. Wilson, 14.
20. Francis J. McHugh, *Fundamentals of War Gaming*, 3d ed. (Newport, R.I.: Naval War College, 1966), 2–21.
21. Wilson, 14.
22. Matute, 55.
23. Wilson, 15.
24. Ibid., 17.
25. Ibid.
26. Anthony S. Nicolosi, "The Spirit of McCarty Little," US Naval Institute *Proceedings*, September 1984, 74.
27. McHugh, 2–44.
28. W. McCarty Little, "The Strategic Naval War Game or Chart Maneuver," US Naval Institute *Proceedings*, December 1912, 1213.
29. Michael Vlahos, "Wargaming, the Enforcer of Strategic Realism: 1919–1942," *Naval War College Review* 39, no. 2 (March-April 1986): 17.
30. Deems, 111.
31. *Report of the HQ USAF Wargaming Review Group*, January 1985, 17.
32. Defense Science Board, *Report of the Defense Science Board Task Force on Computer Applications to Training and Wargaming* (Washington, D.C.: Government Printing Office, May 1988), 6.
33. Vlahos, 19.
34. Wilson, 39.
35. "War Games," *Military Review* 41, no. 6 (June 1961): 68.
36. Vlahos, 15.
37. Wilson, 41.
38. *Report of the Defense Science Board*, 5.

[illegible] "War [illegible]," Military Review [illegible] (December [illegible]): [illegible].

[illegible]

[illegible] "[illegible] of War [illegible]," Military Review [illegible] ([illegible]): [illegible].

[illegible] "[illegible]," Military Review [illegible]: [illegible].

[illegible] "War Games," [illegible].

[illegible] Ibid., [illegible].

[illegible]

[illegible] Ibid.

[illegible] Wilson, [illegible].

[illegible] Garry D. Brewer and Martin Shubik, The War Game: A Critique of Military Problem Solving (Cambridge, Mass.: Harvard University Press, 1979), [illegible].

[illegible] Ibid., [illegible].

USING A SLEDGEHAMMER TO KILL A GNAT

The Air Force's Failure to Comprehend Insurgent Doctrine during Operation Rolling Thunder

You ask: How then can we cope with the enemy's enormous war machine? There is the example of the monkey coping with the Princess of the Iron Fan. Though the Princess was a very formidable monster, the monkey, by changing himself into a tiny insect, found his way into her entrails and quelled her.

—Mao Tse-tung

C2C DIEGO M. WENDT, USAFA

The Vietnam War is still, to this day, a great source of irritation in the entrails of US military strategists. Numerous studies have focused upon political, military, and societal concerns in attempting to unravel the mystery that made the Princess of the Iron Fan an alias for Uncle Sam. The enigma of a war won by an enemy that lost every battle of significance is a concept seemingly unfathomable to the dictates of reason.

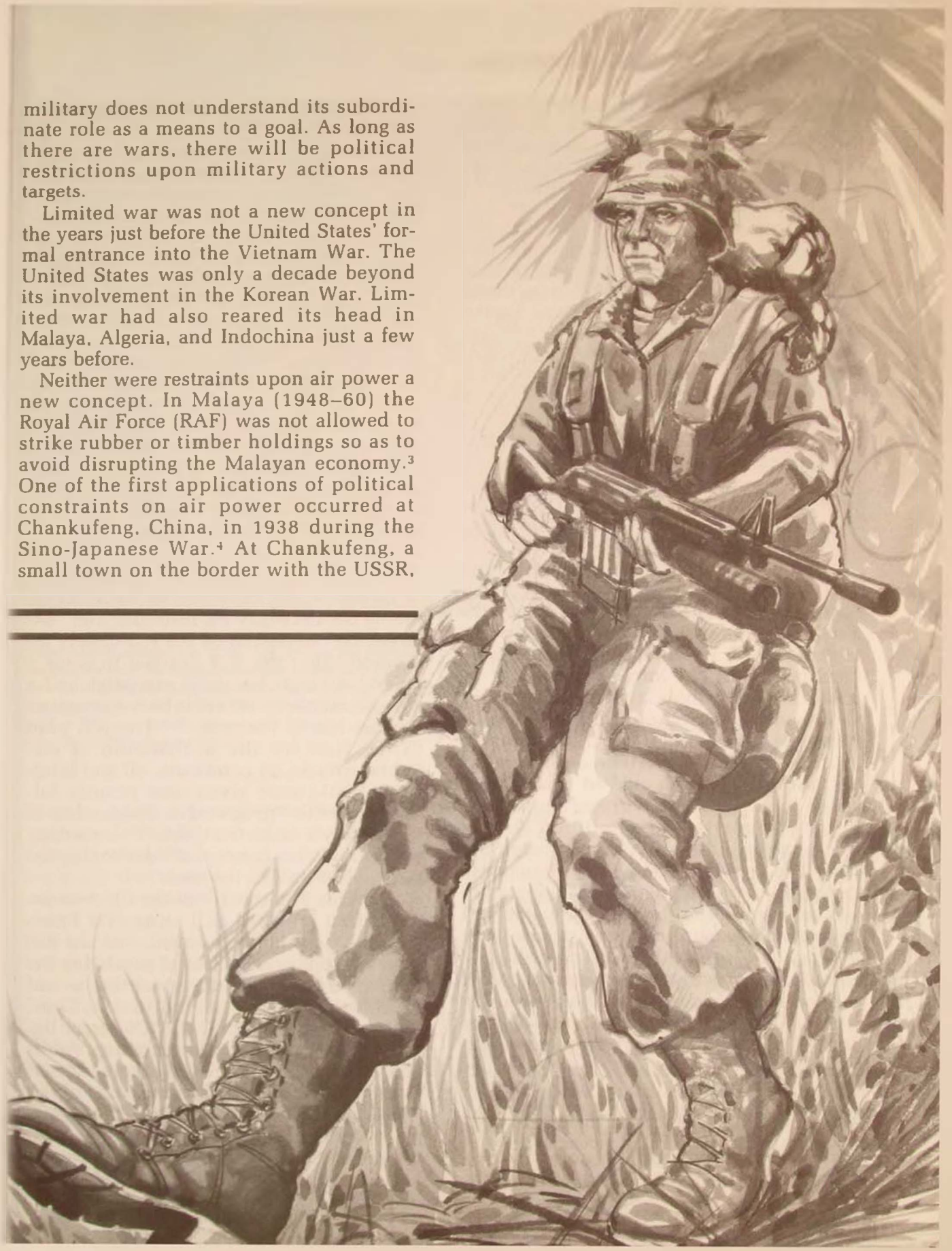
Many works have laid the blame for the US defeat on political restrictions imposed upon the military, specifically the US Air Force.[1] This contention is still held by many of the Air Force high command who served during the conflict. An assertion that embodies this attitude was stated by Lt Gen Joseph Moore, 2d Air Division commander in 1969, not long after the abandonment of Operation Rolling Thunder. Moore contended that the Air Force "was not effective in knocking out the will to fight ... of the North Vietnamese, because we weren't allowed to hit those targets that would have done that."[2]

Whether his contention is true or not is immaterial. His statement may have a certain degree of validity, but one must remember that war is a means of achieving a political end. To deny this basic truth is to deny any purpose for the existence of the military other than gratuitous violence. In war, the political and the military are inextricably intertwined. Faulting one without acknowledging the other indicates that the

military does not understand its subordinate role as a means to a goal. As long as there are wars, there will be political restrictions upon military actions and targets.

Limited war was not a new concept in the years just before the United States' formal entrance into the Vietnam War. The United States was only a decade beyond its involvement in the Korean War. Limited war had also reared its head in Malaya, Algeria, and Indochina just a few years before.

Neither were restraints upon air power a new concept. In Malaya (1948–60) the Royal Air Force (RAF) was not allowed to strike rubber or timber holdings so as to avoid disrupting the Malayan economy.[3] One of the first applications of political constraints on air power occurred at Chankufeng, China, in 1938 during the Sino-Japanese War.[4] At Chankufeng, a small town on the border with the USSR,



the Soviets had struck at Japanese forces with air power in order to retake Japanese-held Soviet garrisons. Capt Kusaka Ryunosuke, operations chief on the Japanese naval general staff, advocated the withholding of air power to avoid enlarging the affair to include a war with the USSR.[5] His advice was taken, and the Japanese were able to avoid a serious confrontation with the Soviets, allowing themselves time to build up their navy for the approaching world war.

All of the aforementioned conflicts fall under Bernard Brodie's definition of limited war, which he formulated for the Rand Corporation in 1958. Brodie, one of the most influential cold war theorists at the time, stated that "while limited war in the past meant limited effort ... for the present and the future it must mean restraint ... and a deliberate resort to use less efficient measures."[6] Perhaps the Air Force's difficulties in understanding the necessity of restraint in Vietnam stemmed from its vague definition of limited war in 1960, defining it as "armed conflict short of general war in which the overt engagement of US military force is directed."[7]

In 1965, however, the Air Force did show some understanding of Brodie's definition of limited war; during Operation Rolling Thunder, whether deliberate or not, the Air Force displayed a particular knack for using "less efficient measures." Initiated in early 1965, Rolling Thunder was a strategic/interdiction campaign designed to convince the North Vietnamese that they could not win.[8] This objective was to be achieved through graduated and increasingly intense bombing strikes upon military and logistics targets in North Vietnam. Stated specifically in a message from the commander in chief of the Pacific Air Forces (CINCPACAF) to the Joint Chiefs of Staff (JCS) in 1965, Rolling Thunder's military objective was to

> reduce the movement of personnel and supplies to support the VC [Vietcong and at the same time] develop and drive home to the DRV [Democratic Republic of Vietnam] leadership the idea that our staying power is greater than theirs.[9]

Through both strategic and tactical interdiction,[10] Rolling Thunder's specific objectives would be achieved (the Air Force—along with the Johnson administration—recognized, however, that total interdiction would be impossible).[11] AFM 1–7, *Theater Air Forces in Counter Air, Interdiction, and Close Air Support*, the Air Force's tactical doctrine manual in 1965, saw the goal of interdiction as destroying or neutralizing "the enemy military potential before it can be brought to bear effectively against our own forces and to restrict the mobility of hostile forces by disrupting enemy lines of communication."[12] AFM 1–7 identified four means to achieve this goal: isolating the battlefield, destroying supplies, delaying enemy forces, and harassing the enemy.[13]

Accordingly, the JCS advanced a target list that it felt would best be suited to achieve the military objective, while recognizing the necessity for restraint. The "94-target list" advanced by the JCS clearly indicated "that the JCS desired to wage a classic strategic bombing campaign and a complementary interdiction campaign against North Vietnam."[14] The JCS plan called first for the destruction of airfields—attacks on petroleum, oil and lubricants (POL) were given next priority followed by the "progressive destruction of the enemy's industrial web"[15]—reverting to the Douhetan concept of "destroying the birds while still in the nest."

However, the spectre of the Chinese intervention in Korea still hung over President Lyndon Johnson's head, and the JCS plan was rejected for fear of escalating the Vietnamese conflict into a war that would include the Chinese and the Soviets. Thus, only a small portion of the JCS target list was initially approved for bombing. Additionally, the administration involved itself in the strategic and tactical aspects of the war, establishing stringent rules of engagement—to the chagrin of the Air Force. After a short time, some of the reins were loosened following Air Force complaints

Many airmen contend that if the right targets had been hit early in the war, the North Vietnamese would have quickly agreed to come to the Paris peace talks (above, Henry Kissinger confers with Le Duc Tho in Paris). But that logic fails to take account of how the war had progressed and what the enemy's objectives were.

that the administration was keeping the military from effectively performing its task. Nevertheless, the Air Force grudgingly felt that it could still accomplish its mission and generally supported the campaign.[16] Even so, the residual pain from the administration's rejection of the 94-target list manifested itself among the military after the abandonment of Rolling Thunder in October 1968. The inability to hit the enemy's "industrial web" early on was a point of contention for the Air Force. As stated by General Moore in 1969, "We had several military targets of some importance [on the list], such as a steel mill up near Hanoi ... a couple of other big cement plants [and] several POL storage areas."[17] In the most basic sense, the 94-target list reflected an inability to identify the enemy's real vulnerabilities; the majority of the targets on the initial list were eventually hit over the three and one-half years leading to Rolling Thunder's inauspicious culmination, with little impact upon the outcome of the conflict.[18] Regarding General Moore's complaint, both the steel mill and cement plants were destroyed during Rolling Thunder with no significant effect upon the enemy.[19] With respect to the POL storage areas, the Vietcong and North Vietnamese Army regulars in South Vietnam did not have much use for oil. As was stated by Gen Alejandro Bayo, the man responsible for training Fidel Castro's insurgent troops, "Feet and legs are the engine of the guerrilla."[20]

What, then, was the Air Force role in the failure of Rolling Thunder? Certainly, the political hierarchy was partially responsible, but as was stated earlier, the military must adapt to and work within the political restraints imposed upon it in warfare. Several developments after the Korean War hindered the application of a sound Air Force air power doctrine during Rolling Thunder. Disregarding the political aspects and focusing solely upon Air Force doctrinal inputs between the Korean and Vietnamese conflicts, several developments portended the ineffectual application of air power during Rolling Thunder. Basically, the Air Force high command's failure to comprehend the past lessons of limited war, counterinsurgent operations, and guerrilla warfare led to the establishment of an unrealistic objective and the reluctance to change tactics during Rolling Thunder—in addition to the reluctance to properly prepare for the contingency of people's war.[21]

> The Korean War was a special case, and air power can learn little from there about its future role in the United States foreign policy in the East.
>
> Thomas K. Finletter
> Secretary of the Air Force, 1950–53

Ignorance at the strategic level was nurtured by a "tunnel vision" view of warfare, especially after the Korean War. The United States had mixed emotions about its outcome, experiencing a distaste for "victory" in which the enemy was not totally defeated. The anti-limited war sentiment was espoused in a "No more Koreas!" rally cry from the government, the American people, and the military.[22] This feeling was present throughout most of the Air Force high command; the general consensus was that there were no lessons to be learned from Korea. In addition to Finletter's assessment, adding more fuel to the fire was the conclusion of the Far East Air Forces (FEAF) report published at the end of the war. The report stated that "any attempt to build an air force from the model of Korean requirements could be fatal to the United States."[23] The Air Force developed a tunnel vision view of warfare, contending that the next war would be general, and one in which nuclear weapons would play a decisive factor.

Despite signing the report, Gen Otto P. Weyland, who commanded the FEAF from 1951–55, soon altered his opinion when subsequently serving as commander of Tactical Air Command (TAC). When asked in 1954 what he had learned from the Korean conflict and the prospects of future warfare, Weyland stated, "We have

The United States attempted to conduct a classic strategic bombing campaign to defeat North Vietnam. Even the bombing of targets such as this oil storage facility outside Hanoi had no significant effect on the war in the South. Instead of accepting the war on its own terms and fighting accordingly, the United States tried to turn the conflict into something it was not.

learned that a problem isn't necessarily stopped by the signing of a truce, or by a temporary political adjudication."[24] When serving as commander of TAC in 1956, Weyland fell in line with the conclusion reached by a Rand study published in the same year regarding future warfare.[25] Weyland said, "I feel rather strongly that the most likely conflict in the immediate future will be the peripheral type. In this event it will be primarily a tactical air war."[26]

Weyland's prophetic claims were not the first to be ignored and would not be the last. At a time when the Air Force was sending military aid and advisors to South Vietnam to help the South Vietnamese counter the threat posed by Ho Chi Minh-backed Communist insurgents, Brig Gen Jamie Gough, director of operations at Headquarters USAF, discussed how the RAF applied counterinsurgent (COIN) doctrine to the Malayan emergency in an article for *Airman* magazine. A British army commander advised General Gough that should the US involve itself in COIN warfare, "it should be ready for a long, drawn out affair."[27]

The lessons of current combat in COIN warfare abounded. The British had recently successfully completed a COIN action that had lasted from 1948 to 1960. Additionally, the French effectively used air power in the Algerian campaign (1954–61). The French success in Algeria was apparently the result of hard-learned lessons from their failure in Indochina (1945–54).

The advent of people's war posed perplexing problems to those forces trying to defeat insurgents. Combat against guerrilla forces had recently taken place in Malaya, Algeria, and Indochina, affording the Air Force the opportunity to learn relevant lessons at no cost. Ironically, the lessons, if any, that the Air Force did learn resulted in the ineffective application of air power during Rolling Thunder.

> The army must become one with the people so that they see it as their own army. Such an army will be invincible.
>
> —Mao Tse-tung

The British and the French did not believe in the infallibility of Mao's teachings. The British success in quelling a Communist insurgency in Malaya was a testament to the Royal Air Force's ability to adapt to and work within political restrictions and the significant problems inherent to COIN warfare. The French effort in Algeria, despite a political loss, was generally viewed as a very effective application of air power against a determined enemy.[28] On the other hand, the problems posed by the Vietminh in Indochina were a significant factor in the French defeat of 1954. These same problems would appear again when the Air Force became actively involved (beyond the advisory role) in Vietnam several years later.

The situations in Malaya and Algeria paralleled the Vietnam War in many ways. The Malayan emergency was strictly a ground war, fought primarily in dense jungle terrain, with the RAF having to deal with difficult weather conditions but enjoying the advantage of air superiority.[29] The Algerian uprising shared the aforementioned similarities with one exception—the Moslem insurgents operated in terrain covering the spectrum from dense cities to open desert. Different from Vietnam was the fact that the insurgents never reached the conventional phase; the insurgent action was restricted to the first and second phases of people's war[30] where guerrilla action was limited to intimidation, terror, and persuasion of the populace to support the Communist party.[31]

The British in Malaya and the French in Algeria viewed COIN warfare as primarily a matter of "identification, isolation, and annihilation of the enemy."[32] Consequently, air strikes were relegated to secondary status while air power's primary importance was in the roles of aerial resupply, reconnaissance, and close air support.[33] Aerial resupply was the most important role for the RAF because it allowed the foot soldier freedom of movement without being tied down to a logistical base. For the French, reconnaissance was the first priority of air power; reconnais-

sance allowed the French to "detect the enemy and keep him under surveillance until the effective force could be applied against him."[34] Close air support (CAS) was employed when the army alone could not handle the matter.[35]

The effectiveness of the British and French CAS efforts sheds light upon the organizational structure employed. Each had a very simplified organizational system (a joint operations center) which allowed on-the-scene prioritization of resource allocation, strike authorization, and the issuance of skeleton operation orders.[36] From the Malayan and Algerian campaigns, the Air Force could have learned the following lessons: expect a long confrontation, understand the importance of joint-service action, employ a simplified command structure, and realize that air power, although not decisive, still plays an integral role.

The effectiveness of French air power in the Algerian campaign was more than likely heightened by the lessons learned from the French-Indochina War. The French air force was able to adapt quickly to the needs dictated by combat. Additionally, the French in general understood guerrilla tactics, consequently applying the most effective force to counter the situation.[37] In essence, the French COIN doctrine was dynamic in nature, allowing the French air force to act effectively, though not decisively.

Certainly, the French experience in Indochina, more so than in Algeria or the British in Malaya, had the most similarities to what the Air Force would see a decade later in the same region. In the enemy being fought, the type of war being waged, the area of battle, and methods employed, the war in Indochina was a veritable crystal ball—if only the Air Force had looked.

The enemy was the Vietminh, an insurgent force led by the leader of the Democratic Republic of Vietnam, Ho Chi Minh. The military genius under Ho's leadership was Gen Vo Nguyen Giap, the subsequent military leader of the DRV (North Vietnam). Both of these men would lead guerrilla armies against US forces in South Vietnam a decade after their victory over the French.

The war actually followed Mao's three phases of classic people's war. Immediately after World War II, signs of unrest among the population appeared, directed towards the French leadership in Vietnam.[38] Ho Chi Minh's poorly equipped guerrilla forces struck in earnest on 19 December 1946, as the Vietminh launched attacks on French-held garrisons. These attacks did relatively little damage but attracted the attention of the French, who sent in 100,000 troops determined to crush the Vietminh insurgency.[39]

The Vietminh remained within Mao's first two phases, gaining recruits and procuring weapons until 1949, the turning point for the Vietminh. The success of Mao's insurgency in China offered the Vietminh an ally who provided a great deal of Soviet and Chinese weaponry in addition to a sanctuary for supplies and forces. This development portended the evolution of the Vietminh to a truly conventional force. In 1950 the Vietminh moved into the third phase of operations, destroying French outposts along the Chinese border, allowing the increase of supplies to Giap's army. In 1951 the Vietminh engaged French forces, overwhelming their garrisons but sustaining enormous losses. Ho's forces withdrew to phase-two operations until 1952.[40] In that year the Vietminh returned to conventional operations, establishing a solid presence in Vietnam north of the 17th parallel (what was later the line between North and South Vietnam).[41] In early 1954 the Vietminh attacked the French garrison at Dien Bien Phu, overrunning the French position on 7 May and securing a French surrender.[42]

French air force officers believed in 1954 that the loss occurred as the result of the misuse of air power. The main complaint was that air power was tied too much to the army when a better application would have been to use it in an air interdiction role. When the French did begin

interdiction operations in 1952, they claimed to have reduced Chinese aid from 1,500 to 250 tons per month. The Vietminh reacted by moving at night and employing varied routes, effectively countering the French interdiction effort.[43]

The French air force encountered a significant problem in the application of close air support; the enemy was often difficult to locate, except in battle. When not engaged, the Vietminh were dug in and "artful when it came to dispersal, camouflage and concealment."[44] The Vietminh would also mingle with the populace, making it difficult to distinguish them from the civilians. Finally, the Vietminh would often begin attacks at night to limit the capability of air power. If a battle lasted into the daylight hours, the Vietminh avoided air attack by "clinging" to the enemy, thus neutralizing French air power for fear that friendly forces might be hit.[45]

The countermeasures, strategies, and tactics employed by the Vietminh would again be seen in Vietnam in 1965–68. It appeared as if air power had no role in COIN operations; interdiction was ineffective, CAS was difficult, and airlift was inefficient. The British applied air power effectively in Malaya under somewhat similar conditions. What was the problem? A Rand study completed for the Air Force in 1961 concluded that the French loss was not due to tying air power to the army as the French air force officers felt; rather, the French loss was the result of their determination to "adhere to their accustomed methods of warfare even when they were no longer paying off."[46] (Along with the countermeasures, strategies, and tactics of the Vietminh, the reluctance to change would also make an unfortunate reappearance in 1965–68.)

In a previously classified US document analyzing the effectiveness of Air Force interdiction from the beginning of Rolling Thunder to May 1966, the following assessment was made:

> Although the strikes have achieved some reduction in the capabilities of the LOC [lines of communication] system and are making logistics operations difficult and costly, the ability of the NVN [North Vietnamese] to support activities in Laos and SVN [South Vietnam] with men and material has not been significantly affected.[47]

The Air Force continued its support of Rolling Thunder because it still believed it could achieve the objective of persuading the North Vietnamese that they could not win. All that had to be done was to increase the effectiveness of its interdiction operations. How did the Air Force intend to do this? The same report cited that an enemy battalion had a consumption rate of 34 tons per day. This was calculated from the North Vietnamese current engagement rate of once every 30 days (the report failed to mention the Vietcong engagement rate). The report then cited that the enemy requirement would be increased to 138 tons per day if he were forced to engage once every seven days.[48] The fact that the Air Force was still pursuing the notion that the North Vietnamese could be convinced that US "staying power was greater than theirs," and that the Air Force felt it could do this by forcing the enemy to engage on a massive scale, displays one thing: a great deal of ignorance regarding the basics of insurgent doctrine.

> If the enemy attacks, I disappear; if he defends, I harass; and if he retreats I attack.
>
> —Mao Tse-tung

The above quote is insurgent warfare in a nutshell. The insurgent has no set timetable; the insurgent cannot be forced to attack; if the enemy attacks, the guerrilla will be very hard to find.

Ironically, Mao's teachings, along with Giap's and various works about insurgencies and how they have been countered in the past (Malaya, Indochina, Japan, the Philippines, the Arab revolt, the Germans in World War II), appeared in the *USAF Counter-Insurgency Orientation Course* book. The aforementioned was only a small portion of the course book, which was required reading at the Air Command and Staff College in 1962.

Throughout the course book, the theme of the protractedness of guerrilla warfare was emphasized. The very man the Air Force was trying to "outlast" had this to say about guerrilla warfare:

> This strategy must be the strategy of long-term war.... If from the outset, the conditions are favorable to the people ... the revolutionary war can end victoriously in a short time. But the war of liberation of the Vietnamese people started in quite different conditions: we had to deal with a much stronger enemy.... In a word, it was impossible for us to defeat the enemy swiftly.[49]

General Giap was talking about the French-Indochina War; he could just as well have been talking about the war to follow in 1964.

But when Giap spoke, the US Air Force did not listen. The Air Force felt that it could handle any situation that arose because it was technologically superior. However, the Air Force ignored an important fact when assessing its COIN capabilities; guerrillas are able to choose when and where they want to fight, thus keeping tight reins over the initiative. The insurgent compels the enemy to fight a reactionary war; if the conditions do not suit the guerrillas, they merely revert to the second or even the first phase of people's war. The US Air Force did not have a grasp of this concept. At the Vietnam Symposium in May 1967, Maj Gen Gilbert L. Meyers, deputy commander of Seventh Air Force from July 1965 to August 1966, concluded, "The fact that the North Vietnamese ... have not mounted a sustained offensive in over a year, substantiates the effectiveness of our interdiction efforts."[50] Gen John P. McConnell, chief of staff, offered this assessment to the audience at the Air Force Association convention in March 1967:

> [The enemy] can still harass and ambush and snipe; but he no longer has any chance of winning; he knows it and our men know it. Our bombing of selected targets in North Vietnam is contributing an important share in that end. The enemy's hue and cry about such bombing is compelling proof that our strikes are hurting him and impeding the flow of supplies to the South.... I am convinced that the mounting pressure of such "strategic persuasion" will ultimately prove a major factor in making the Communists amenable to negotiations.[51]

Had Air Force planners read their lessons regarding guerrilla warfare, they might have found that making the guerrilla "amenable to negotiations" is a rather insignificant, if not irrelevant, goal. One of the tactics of the guerrilla is to negotiate only in order to further "protect" the war. The guerrilla has no interest in compromise. According to Mao, negotiation "is undertaken for the dual purpose of gaining time to buttress a position (military, political, social, economic) and to wear down, frustrate, and harass the opponent."[52]

All the information necessary to understand guerrilla warfare was available to the Air Force years before the American entrance into the Vietnam War. Why did the Air Force not do its homework?[53] Why did the Air Force not feel the need to establish some sort of doctrine applicable to counterinsurgent warfare?

In the most basic sense, the Air Force failed to prepare for COIN warfare because it thought it could handle any contingency. The general feeling was summed up best by a previously classified Air Force file in 1958:

> It has been postulated that if we prepare adequately for total war, then we can handle limited wars in stride with the forces so created. Opponents to this idea raise objections that Total war forces cannot efficiently perform limited war tasks, i.e., the idea of using a sledgehammer to kill a gnat.[54]

Though stated in 1958, there is evidence that the sledgehammer mentality was still present just prior to Vietnam. In a 1961 special study done for the Air Force titled *Basic Problems in Counter-Guerrilla Air Operations*, the author states, "It seems unlikely that nuclear weapons will find usefulness in the early, bandit-like stage of guerrilla operations.... They may be very useful when warfare begins to enter the

third, more conventional, stage."[55] A statement made in 1963 by then Lt Gen Gabriel P. Disosway, a little over a year before becoming commander of TAC, reflected the same line of thinking. In reference to guerrilla warfare, which he deemed a threat of "the greatest magnitude," Disosway said, "One sortie and one low-yield nuclear bomb would do the same job on a specific tactical objective as 8,000 sorties with 25 million pounds of napalm."[56] The optimist might note that he was at least not talking about a sledgehammer—a ball peen hammer maybe, but not a sledgehammer. It was this type of ignorance regarding the basics of limited warfare and why "less efficient measures" must be used that was severely detrimental to the preparation of the Air Force for COIN warfare.

> Without preparedness superiority is not real superiority and there can be no initiative either. Having grasped this point, a force which is inferior but prepared can often defeat a superior enemy.
>
> —Mao Tse-tung

The US Air Force was poorly prepared for the problems posed by people's war. The tunnel vision previously alluded to significantly hindered the development of an applicable tactical doctrine. This reluctance to take the threat of insurgent warfare seriously was evident in Air Force tactical manuals. The 1964 version of AFM 1–1, *United States Air Force Basic Doctrine*, the basic Air Force doctrinal manual, devoted only two of 13 pages to conventional air operations. The rest of the manual discussed air operations in the context of general war, with the emphasis upon the employment of nuclear weapons.[57]

AFM 51–44, *Fighter and Fighter-Bomber Employment in Tactical Air Operations*, was the operational manual in use at the commencement of Rolling Thunder. Published in 1953 at the end of the Korean War, the manual provides startling insight into how much effort the Air Force felt was necessary in preparing its fighter pilots for conventional operations. Stationary trucks (trucks in general were a prime target during the interdiction efforts of Rolling Thunder) were to be attacked only after the pilot was able to detect whether it was a decoy. According to the manual, trucks are sometimes camouflaged by making them look inoperable; the pilot can determine if the truck is a decoy by noting that "the condition of the windshield and the tires usually indicate the condition of the target."[58]

Of course, that was predicated upon the fighter-bomber being able to find and hit the target. The average number of trucks damaged or destroyed per 100 sorties over the first year of Rolling Thunder was rather small (3.7).[59] Perhaps this number was so small because the pilots heeded the advice of AFM 51–44 regarding camouflage detection:

> Detection of vehicles in heavily wooded areas ... is extremely difficult because of the dense foliage.... The pilot must fly low and slow enough to look under and through the trees to detect the enemy.... Any unusual mound of freshly cut foliage should be investigated and, if necessary, fired into.[60]

These recommendations, no matter how impractical, did at least show that the Air Force knew that the enemy would be difficult to locate during COIN warfare. Nevertheless, judging from the low number of trucks damaged or destroyed, the Air Force did a lot of weed killing.

The primary emphasis on nuclear weapons delivery by TAC after the Korean War was a significant factor contributing to the Air Force's low truck-kill total in Vietnam. In order to keep Tactical Air Command a viable force in the face of a shrinking budget, General Weyland (commander of TAC) began training pilots for a nuclear role in the mid-1950s.[61] Weyland, whose prophetic cries regarding future warfare were ignored, displayed his inability to comprehend the need for restraint in limited war in a statement in which he reminisced about Korea:

> I vividly remember during the Korean War the tremendous number of high-explosive bombs our B-29s rained on the bridge over the Han River.... One low-yield atomic

> weapon delivered by a tactical fighter ... would have destroyed that bridge.[62]

By the time Operation Rolling Thunder began rolling, pilots had loosened to a 750-foot circular error probable (CEP)—the radius from the aim point that half of the bombs dropped will fall within. This number is sufficient for the impact of a tactical nuclear weapon but is far from adequate for conventional weaponry. It took several years for the CEP to be lowered to a manageable 365 feet.[63]

The general lack of preparedness for what Vietnam would hold in store for the Air Force was best summed up by a study titled *Tactical Warfare and the Limited War Dilemma*. Done for the Air Force in 1961, the report came to the conclusion that

> TAC is without a reasonable sense of mission, present resources, or an adequate development program; SAC [Strategic Air Command] is clearly inappropriate for this role and should not be diverted from its main deterrent mission in any case; MATS [Military Air Transport Command, now Military Airlift Command] is equipped and deployed for peacetime logistics and "pipe-line" operations and only now is beginning to think seriously about developing a believable capability to support tactical operations.[64]

But then, who was going to argue with a princess carrying a sledgehammer?

After three and one-half years of bombing North Vietnam, Operation Rolling Thunder came to an inconclusive end on 1 November 1968. The North Vietnamese agreed to negotiate with the United States in Paris but in no way indicated that they were prepared to stop fighting in the South or that they had been forced to come to the conference on US terms.[65] What was the Air Force role in the failure of Rolling Thunder?

At the root of the Air Force failure in Rolling Thunder was a basic misconception about limited insurgent warfare despite the evidence of teachings at the Air Command and Staff College and the lessons available to the Air Force through Malaya, Algeria, and Indochina. Ignorance regarding the needs and motives of insurgents allowed the Air Force to support a highly questionable objective that was never achieved. The Air Force's own ignorance regarding people's war resulted in a reluctance to change tactics that were essentially ineffective. This reluctance to change was nurtured in the years before Vietnam and hindered the Air Force's abilities to recognize the potential threat posed by people's war. Consequently, the Air Force lacked the foresight necessary to prepare for such a contingency.

This last consequence is a bit of a surprise considering how intimate the Air Force is with the teachings of Italian air marshal Giulio Douhet. It was he who said, "Victory smiles upon those who anticipate the changes in the character of war, not upon those who wait to adapt themselves after the changes occur."[66] □

Notes

1. An interesting work is W. Hays Parks's "Rolling Thunder and the Law of War," *Air University Review*, January-February 1982, 2–23. Parks contends that the loss was a result of political ignorance regarding an unwritten "law of war." See also Col Dennis M. Drew's *Rolling Thunder 1965: Anatomy of a Failure*, AU-ARI-CP-86-3 (Maxwell AFB, Ala.: Air University Press, October 1986). Drew provides intriguing insight into the political/military interface problems prior to and during Rolling Thunder, establishing that its failure was in part due to the distrust bred between the Johnson administration and the JCS (34–49).

2. Maj Samuel E. Riddlebarger and Lt Col Valentino Castellina, *USAF Oral History Interview of Lt Gen Joseph H. Moore* (U), interview no. 241, 22 November 1969, 67. (CONFIDENTIAL) Information extracted is unclassified.

3. Robert L. Hardie, *Airpower in Counterinsurgency Warfare*, Professional Study no. 3373 (Maxwell AFB, Ala.: Air War College, 1967), 29.

4. Alvin D. Coox, "Restraints on Air Power in Limited War: Japan vs. USSR at Chankufeng, 1938," *Aerospace Historian* 17 (December 1970): 118.

5. Ibid., 118–19.

6. Bernard Brodie, *The Meaning of Limited War*, Rand Report RM-2224 (Santa Monica, Calif.: Rand Corporation, 1958), 1.

7. Instruction Circular no. 61-10, *Unit X: Limited War*

(Maxwell AFB, Ala.: Air Command and Staff College, 1961), 1.

8. Drew, 11.

9. Message, 120314Z, commander in chief Pacific, to JCS, May 1965.

10. For our purposes, *strategic interdiction* will be defined as "having payoffs that are only indirectly and in the long term related to [friendly] ground force success," (the point of manufacture); while *tactical interdiction* "has payoffs directly and immediately related to the success of friendly ground forces" (points of dissemination up to the battlefield). Edmund Dews, *A Note on Tactical vs. Strategic Air Interdiction*, Rand Report RM-6239-PR (Santa Monica, Calif.: Rand Corporation, April 1970), 1–3.

11. Message, 120314Z.

12. AFM 1–7, *Theater Air Forces in Counter Air, Interdiction, and Close Air Support*, 1954, 2.

13. According to AFM 1–7, isolation serves to "(1) compel the enemy to consume his forward supplies, (2) prevent reinforcements from being moved into the area, (3) prevent the withdrawal of forces, (4) prevent the shifting of forces within the area, (5) impose an untenable position on hostile forces." Destruction of supplies serves to reduce the level of resources readily available and "delay or deny critically needed resources for combat use." Delay gains time for friendly maneuvering and buildup while preventing the enemy from acting at his desired rate. The objective of harassment is "to cause the enemy general inconvenience, i.e., force the enemy to take extra measures to safeguard his resources." AFM 1–7, 13–14.

14. Drew, 30.

15. Ibid.

16. Message, 120314Z.

17. *Interview of Lt Gen Joseph H. Moore*, 13.

18. Although some might argue that air strikes are less effective when carried out over a long period of time—rather than early, intense, and short—the Air Force still emphasized the "vital" and decisive nature of these targets throughout Rolling Thunder until their destruction.

19. *Interview of Lt Gen Joseph H. Moore*, 13.

20. Quoted in *USAF Counter-Insurgency Orientation Course* (Maxwell AFB, Ala.: Air Command and Staff College, 1962), N-1-31.

21. Throughout this article, *people's war*, *guerrilla warfare*, and *insurgent warfare* will be used interchangeably.

22. Drew, 27.

23. Robert F. Futrell, *The United States Air Force in Korea, 1950–1953*, rev. ed. (Washington, D.C.: Office of Air Force History, 1983), 693.

24. Otto P. Weyland, "Can Air Power Win in Little Wars?" *U.S. News & World Report*, 23 July 1954, 57.

25. N. C. Peterson, *Comments on Warfare in the Next Ten to Twenty Years*, Rand Report P-889 (Santa Monica, Calif.: Rand Corporation, 1956).

26. Quoted in M. J. Armitage and R. A. Mason, *Air Power in the Nuclear Age*, 2d ed. (Urbana, Ill.: University of Illinois Press, 1985), 44–45.

27. Jamie Gough, "Airpower and Counter-Insurgency," *Airman* 6 (August 1962): 5.

28. The French were militarily effective in the Algerian uprising because they were able to isolate the Moslem insurgents from the rest of the population by the end of the conflict, in great part due to air power. However, the campaign was a political loss for the French because France could no longer economically maintain the ownership of its colony. *Guerrilla Warfare and Airpower in Algeria, 1954–1960* (Maxwell AFB, Ala.: US Aerospace Studies Institute, 1965), iv–vii.

29. Hardie, 23–25.

30. *People's war*—as defined by Mao and practiced by Communists in China, Malaya, Indochina, Cuba, and subsequently employed in South Vietnam—generally attempted to follow three phases. The first phase is characterized by terrorist strikes of an isolated nature against the enemy while the insurgents try to win the population over to their side. The second phase is characterized by increasing direct action against the enemy (ambushes, attacks on poorly defended outposts, sabotage, etc.); its primary purpose is to procure arms and other essential materiel while continuing to enlist recruits. The last phase is the "decisive phase" where the guerrilla force "completes its transformation into an orthodox establishment capable of engaging the enemy in conventional battle." Mao Tse-tung, *On Guerrilla Warfare*, trans. Samuel B. Griffith (New York: Praeger Publishers, 1961), 21–23.

31. Hardie, 30.

32. Ibid., 44.

33. Gough, 6.

34. Hardie, 25.

35. Special operations also played a role as air power was used to drop leaflets and transmit recorded messages to help undermine the persuasive efforts of the Communists. Hardie, 25.

36. Hardie, 25. Granted, this sort of freedom was not available to the Air Force for strikes within North Vietnam, but there were no such restrictions upon air power (in the tactical interdiction role) in South Vietnam. The command structure employed throughout Vietnam was extremely complex. North Vietnam and Laos were divided into seven route packages (RP) for the purpose of air operations. Each RP came under the authority of a different command, requiring separate inputs for target validation and strike authority. The various RPs came under the authority of the commander of US Military Assistance Command, Vietnam (COMUSMACV), the JCS, commander in chief of Pacific Air Forces (CINCPACAF), and the commander in chief of the Pacific Fleet (CINCPACFLT). *PACAF-Corona Harvest: The USAF in Southeast Asia, 1970–1973; Lessons Learned and Recommendations: A Compendium*, 16 June 1975.

37. *Guerrilla Warfare and Airpower in Algeria*, 16–17.

38. All of Vietnam (both North and South) had been a French colony before World War II but eventually fell under Japanese authority during the war. The political vacuum created by the absence of Japanese authority at the end of the war allowed the Vietminh to establish themselves as the de facto government of North Vietnam before the French could reoccupy the territory. The French recognized the DRV government as a free state within the French Union but would not grant it full independence. Bernard B. Fall, *Street without Joy: Insurgency in Indochina, 1946–63*, 3d rev. ed. (Harrisburg, Pa.: Stackpole Co., 1963), 24–28.

39. Phillip B. Davidson, *Vietnam at War: The History, 1946–1975* (Novato, Calif: Presidio Press, 1988), 42–47.

40. Fall, 29–57.

41. Davidson, 137–52.

42. Davidson provides an in-depth and exciting account of the battle at Dien Bien Phu, describing its origins, the strategies used, and the tactics employed (193–269).

43. George K. Tanham, "Communist Revolutionary Warfare," in *USAF Counter-Insurgency Orientation Course*, vol. 1 (Maxwell AFB, Ala.: Air Command and Staff College, 1962), L-36.

44. Ibid., L-37.

45. Ibid.

46. Ibid., L-38.

47. Headquarters USAF, *Analysis of Effectiveness of Interdiction in SEA, Second Progress Report, May 1966*, 33.

48. Ibid., 3.

49. Vo Nguyen Giap, *People's War, People's Army: The Viet Cong Insurrection Manual for Underdeveloped Countries* (New York: Praeger Publishers, 1962), 46.

50. Maj Gen Gilbert L. Meyers, "Why Not More Targets in the North?" *Air Force* 50, no. 5 (May 1967): 77.

51. Gen John P. McConnell, "What the Air Force Is Learning from Vietnam," *Air Force* 50, no. 5 (May 1967): 45.

52. Mao Tse-tung, 22.

53. Some may argue that both the Johnson and Nixon administrations were also to share in the blame for not realizing the true nature of the negotiation process However, civilian errors in judgment regarding military affairs should be anticipated in time of war; it is the military advisors' job to understand the enemy's intentions and persuade the president accordingly.

54. Project no. Au-1-57-ESAWAC, "The USAF in Limited War," 20 March 1958, 1, Special Collections, United States Air Force Academy Library.

55. John L. Phipps, *Basic Problems in Counter-Guerrilla Air Operations* (Maxwell AFB, Ala.: Air Command and Staff College, 1962), 56.

56. Lt Gen Gabriel P. Disosway, "Tactical Air Power," *Ordnance* 48 (July-August 1963): 47.

57. AFM 1–1, *United States Air Force Basic Doctrine*, 14 August 1964, 5–1 through 5–10.

58. AFM 51–44, *Fighter and Fighter-Bomber Employment in Tactical Air Operations*, 1953, 37.

59. Headquarters USAF, *Analysis of Effectiveness*, 37.

60. Ibid.

61. Gen Otto P. Weyland, "Air Power in Limited War," *Ordnance* 44 (July–August 1959): 41.

62. Ibid., 43.

63. George Weiss, "TAC Air: Present and Future Lessons, Problems, and Needs," *Armed Forces Journal*, September 1971, 31.

64. Robert B. Johnson, *Tactical Warfare and the Limited War Dilemma* (Santa Barbara, Calif.: General Electric Co., 1961), 6.

65. Jon M. Van Dyke, *North Vietnam's Strategy for Survival* (Palo Alto, Calif.: Pacific Books, 1972), 22.

66. Giulio Douhet, *The Command of the Air*, trans. Dino Ferrari (Washington, D.C.: Office of Air Force History, 1983), 30.

Basis of Issue

AFRP 50–2, **Airpower Journal**, is the professional journal of the Air Force. Requirements for distribution will be based on the following:

1 copy for each general on active duty with the US Air Force and Air Reserve Forces.

1 copy for every 5 active duty US Air Force officers in grades colonel through captain.

1 copy for every 15 active duty US Air Force officers in the grade of first lieutenant.

1 copy for each US Air Force or Air Reserve Forces office of public affairs.

3 copies for each Air Reserve Forces unit down to squadron level.

3 copies for each air attaché or advisory group function.

1 copy for each non-US Air Force, US government organization.

1 copy for each US Air Force or US government library facility.

If your organization is not presently receiving its authorized copies of the *Airpower Journal*, submit a completed AF Form 764a to your publications distribution office (PDO). Note sample below.

The Editor

(PRESS HARD WHEN USING BALL POINT PEN)

SHORT TITLE AND DATE	UNIT OF RQN	CLASS	SYMBOL	REQUISITION	REQUIREMENT
AFRP 50-2	EA	UNCLAS	F		(—)COPIES

TO:	FROM:	FOR FORMS USE ONLY	
YOUR BASE PDO	YOUR OFFICE ADDRESS OR CUSTOMER ACCOUNT REPRESENTATIVE	MONTHLY USAGE	ON HAND

REMARKS

ESTABLISH NEW REQUIREMENT FOR (___)COPIES OF AFRP 50-2, AIRPOWER JOURNAL

R. Q. REQUISITION

	QUARTERLY		EMERGENCY

DEPOT USE

DATE PREPARED ✓

SIGNATURE AND TITLE ✓

EXAMPLE

AF FORM SEP 75 764a PREVIOUS EDITION IS OBSOLETE, SUPERSEDES AF FORMS 124A, NOV. 74 AND 575, FEB. 74 WHICH ARE OBSOLETE

RQN AND RQMT REQUEST

THE TRANSFORMATION OF SOVIET MARITIME AIR OPERATIONS

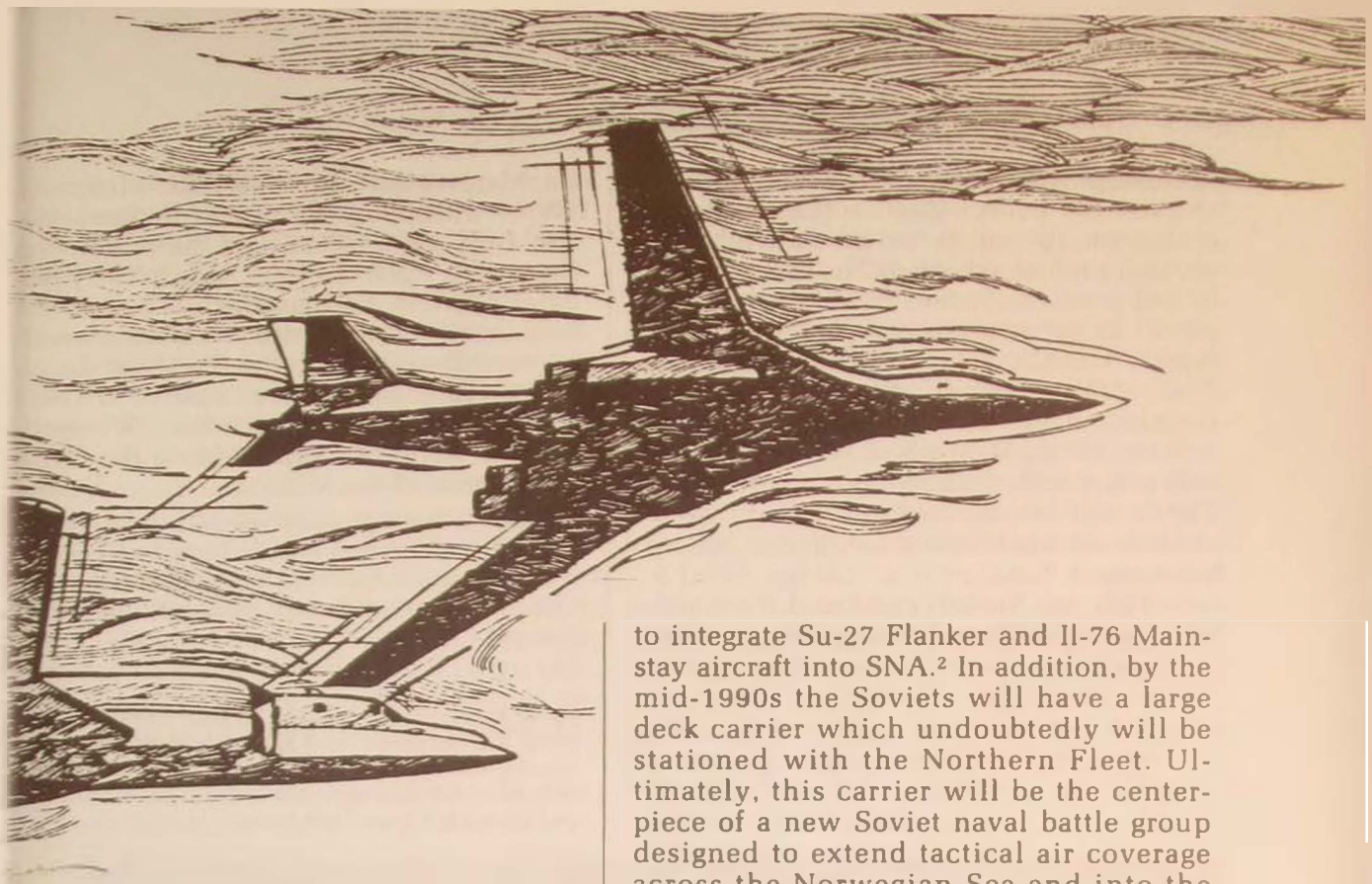
IMPLICATIONS FOR US MARITIME STRATEGY

DR DONALD D. CHIPMAN

Over the years, the US Air Force and Navy have forged joint operational plans to fight the Soviets at sea. This cooperation began in 1982, when the USAF signed a Memorandum of Agreement with the Navy. Thereafter, the USAF increased its commitment to maritime operations by assigning B-52s to fly mine-laying missions and Harpoon missile strikes. In recent years, B-52s, E-3As, and F-15s have joined with naval forces in several maritime exercises.

In the fall of 1988, the North Atlantic Treaty Organization (NATO) conducted Teamwork 88, a major exercise in the Norwegian Sea in which the USAF flew more than 50 sorties in 17 days. The highlight of this exercise occurred when B-52s planted capsulated torpedo (CapTor) minefields and then flew several Harpoon strikes against an opposing fleet. Teamwork 88 allowed NATO to evaluate the allies' ability to conduct a maritime campaign in the Norwegian Sea and project forces ashore in northern Norway.[1]

To ensure a nuclear second-strike capability, the Soviets have established a defensive strategy to protect their ballistic-missile submarines stationed in the Barents Sea. Despite all the political changes in Eastern Europe and the USSR, the Soviets have continued to upgrade this submarine program, and defense of these



ssets remains a high priority. If threatned, the Soviets' Northern Fleet, whose ome port is along the Kola Peninsula USSR), would maneuver into the Norvegian Sea in an attempt to deny an enmy this theater of operations. A large porion of the Northern Fleet's capabilities vould come from Soviet air power.

In recent years, the transformation of the Soviets' maritime air operations has aused changes in the nature of this naval ir threat. Twenty years ago, Tu-95/142 Bear and Tu-16 Badger aircraft comprised he primary threat over the Norwegian Sea. Then in the late 1970s, Tu-26 Backfire aircraft were assigned to Soviet Naval Aviation (SNA) and were soon flying missions out of the Kola Peninsula and into the Norvegian Sea theater. This sweptwing aircraft—with its low-altitude ability, transonic dash speed, and firepower—significantly enhanced SNA's strike capabilities and complicated allied air defense plans.

Yet, the addition of the Backfire is only the first step in this transformation. Current signs indicate that the Soviets intend to integrate Su-27 Flanker and Il-76 Mainstay aircraft into SNA.[2] In addition, by the mid-1990s the Soviets will have a large deck carrier which undoubtedly will be stationed with the Northern Fleet. Ultimately, this carrier will be the centerpiece of a new Soviet naval battle group designed to extend tactical air coverage across the Norwegian Sea and into the North Atlantic.

These are the obvious signs that Soviet maritime air operations are in rapid transition. With Flankers, Mainstays, and a new attack carrier, the Soviets will be able to fly combat coverage across the entire Norwegian Sea. Indeed, this transformation will enhance the Soviet maritime threat against allied sea-lanes and force US commanders to reconsider tactics in the conduct of Harpoon missile strikes, minelaying missions, and air-to-air combat. To understand this transformation and its implications for US maritime operations, one must examine how these SNA operations originated.

Soviet Naval Aviation, 1970–1989

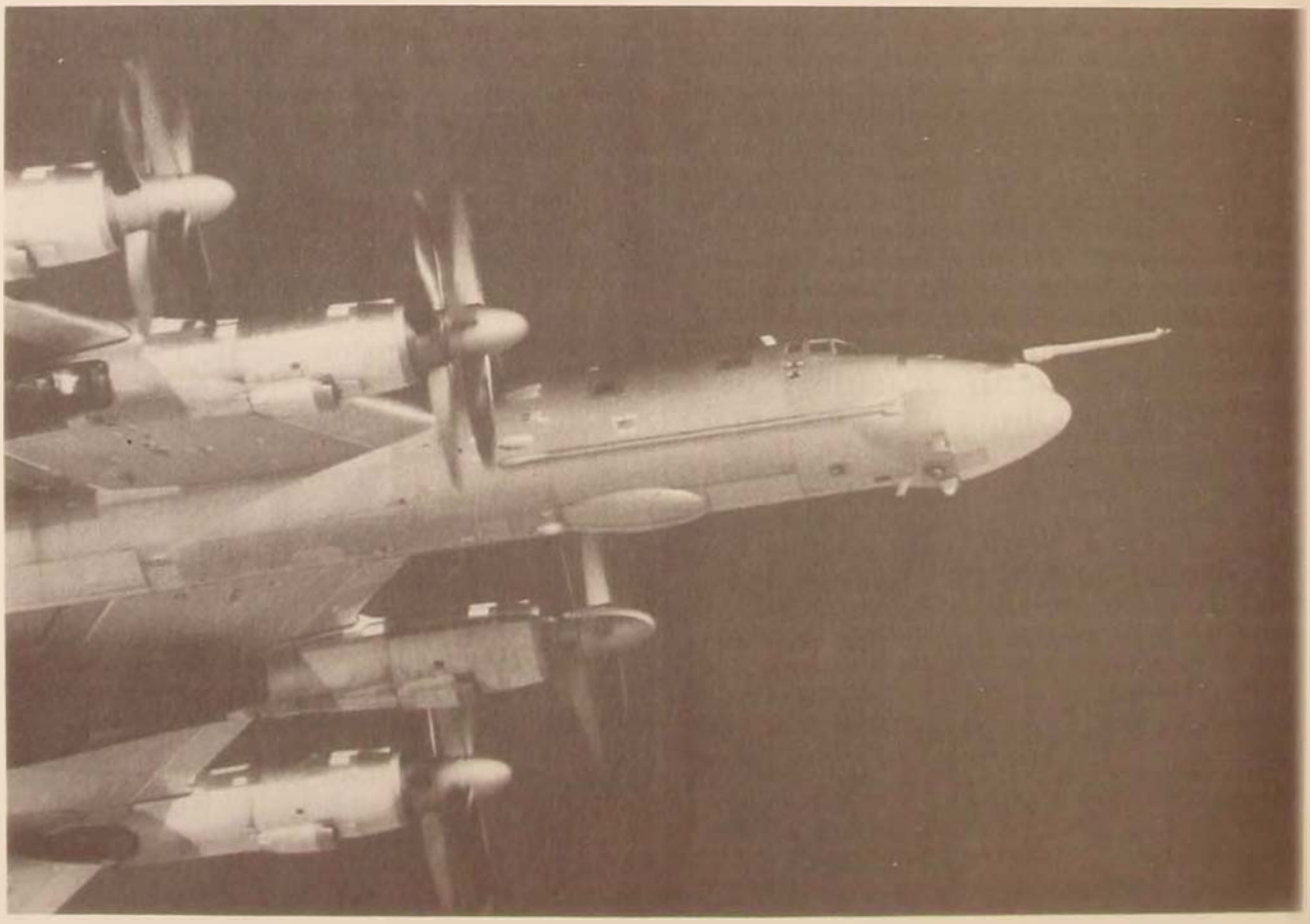
After World War II, SNA's primary mission was to defend the Soviet Union against US carrier attacks. Toward that end, in the 1950s the Soviets transferred Bears and Badgers from Long Range Aviation to SNA.[3] Thus, by the 1970s Bears

craft participated in various maritime exercises, such as *Okean* 1975. This exercise began when a Soviet naval task force, posed as an aggressor, sailed out of the North Atlantic and into the Norwegian Sea. Working with reconnaissance aircraft, the older Bears and Badgers—the primary striking force—flew out of the Kola Peninsula and attacked the opposing task group. These sorties were coordinated with strikes against the enemy by Soviet submarines.[4]

In 1976 the Soviets enhanced their maritime air operations by assigning about 40 Backfires—half of their inventory—to SNA.[5] Unlike the Bears and Badgers, the Backfires came directly off the production line into a maritime role. Able to carry two AS-4 Kitchen air-to-surface missiles, the high-speed, long-range Backfire dramatically increased both the SNA's strike capabilities and the threat against NATO's maritime forces.[6] In 1979 the US Department of Defense commented on the initial appearance of Backfires:

> There is increasing evidence that the Soviet bomber and cruise missile force may be overtaking their submarine force as a threat to our fleet and to our forces necessary for the resupply of Europe. They can concentrate air-

Soviet Naval Aviation has used the Bear bomber since the 1950s. The one shown below is capable of delivering cruise missiles. Although newer aircraft have been added to the Soviet military arsenal, the Bear is still a major reconnaissance asset and a threat to US naval task forces.



> craft, coordinate attacks with air, surface, or submarine-launched missiles, and use new technology to find our fleet units, jam our defenses and screen their approach.[7]

From 1976 through the 1980s, the Soviets worked to perfect the Backfire's maritime tactics. For instance, in September 1982 four Backfires approached the carriers USS *Midway* and *Enterprise* as these ships were conducting fleet exercises near the Aleutian Islands. At a distance of 120 miles from the carriers, the aircraft simulated release of their cruise missiles. The following day, four more Backfires approached the fleet in another simulated air strike. According to one report, this was the first time that Backfires had flown outside Eurasia.[8] These simulated carrier attacks provided an indication of the Soviets' tactical priorities.

As if to confirm the Backfire's role, late in 1982 *Soviet Naval Digest* published several articles describing British and Argentine air operations during the Falklands War. The Soviets noted that, in general, air-launched cruise missiles were effective antiship weapons. With only a limited supply of Exocet missiles, commented one Soviet writer, the Argentines successfully hit their targets 50 percent of the time.[9] Another article stated that "on the whole, the high effectiveness of cruise missiles in destroying surface ships has been confirmed."[10] A 1984 US Navy analysis of SNA's reaction to the Falklands War claimed that the Soviets were quick to see the value of the air-launched missile strikes. This study concluded that since air-to-surface missiles comprised a large part of the SNA's arsenal, Soviet praise of the Exocet was not surprising.[11] Thus, the Falklands War provided a rationale for the Soviets to continue perfecting their maritime air operations.

In 1983 the journal *Soviet Aerospace* estimated that the Soviets were building at least 30 Backfires per year and that SNA had approximately 100 of these aircraft.[12] Then in 1984, Backfires flew numerous sorties over the North Atlantic during one of the largest Soviet maritime exercises in over a decade. These operations began when the *Kirov* battle cruiser, escorted by approximately 15 ships, departed the Barents Sea and sailed south into the Norwegian Sea. At the same time, another Soviet surface squadron departed the Baltic Sea and headed toward the Norwegian Sea. Subsequently, Backfires deployed to the Kola Peninsula and began flying simulated strikes against this force.[13]

The Soviets conducted yet another Norwegian Sea exercise on 4 April 1984. Again, maritime strike aircraft flew several attacks against a simulated enemy task force.[14] According to John Lehman, former secretary of the Navy, until 1984 most Soviet maritime exercises were defensive in nature; however, the appearance of the Backfires in such numbers and the presence of numerous Soviet ships in the Norwegian Sea clearly indicated the offensive nature of these maneuvers.[15] Thus, by the mid-1980s, there were obvious signs that the Backfire had developed its tactics and was fully integrated into the Soviets' maritime air operations.

After 1984 the Soviets scaled down their naval maneuvers, preferring to conduct exercises near their own coasts. However, they continued to perfect Backfire operations in 1985 by simulating attacks against one of the *Kiev*-class carriers. In March of that year, the carrier *Novorossiysk* and an escorting task force departed the Sea of Japan, sailed to the south of Okinawa, and then made their way east across the Pacific. After approximately eight days, the ships turned and headed northwest toward the Kuril Islands, simulating an enemy carrier strike against the Soviet Union. As the *Novorossiysk* approached the islands, about 700 miles east of Japan, Bears flew reconnaissance missions near the battle group and helped vector some 20 Backfires to their targets. A US Navy description of the *Novorossiysk* exercise notes that

> the force was hit by simulated air strikes and probably by submarines firing torpedoes and cruise missiles from 1120 km east of Japan, on 14 April. They came at it with submarines and aircraft—everything they had.[16]

Throughout these various exercises, the Soviets coordinated their air attacks with submarine strikes. Apparently, the Soviets intend to attack en masse, using every available weapons system and striking from all directions. But recent evidence suggests that even these tactics are changing. In 1987 Norwegian air surveillance spotted Flankers escorting Badgers during simulated ship strikes in the Norwegian Sea.[17] Although not officially assigned to SNA, the Flanker has excellent capabilities, including a flight range of approximately 600 miles.[18] Marc Liebman states that the Flanker could substantially enhance Soviet maritime air operations:

> Su-27s may be tasked to escort Badger/Backfire bombers to a point where they could launch their long-range cruise missiles at US/NATO ships or naval bases in Iceland or on the Shetland, Orkney, or Faroe Islands. NATO fighters patrolling the Greenland-Iceland-Norway Gap to protect surface action, convoy, and carrier battle groups would have to engage the Su-27 escorts before they could attack the bombers.[19]

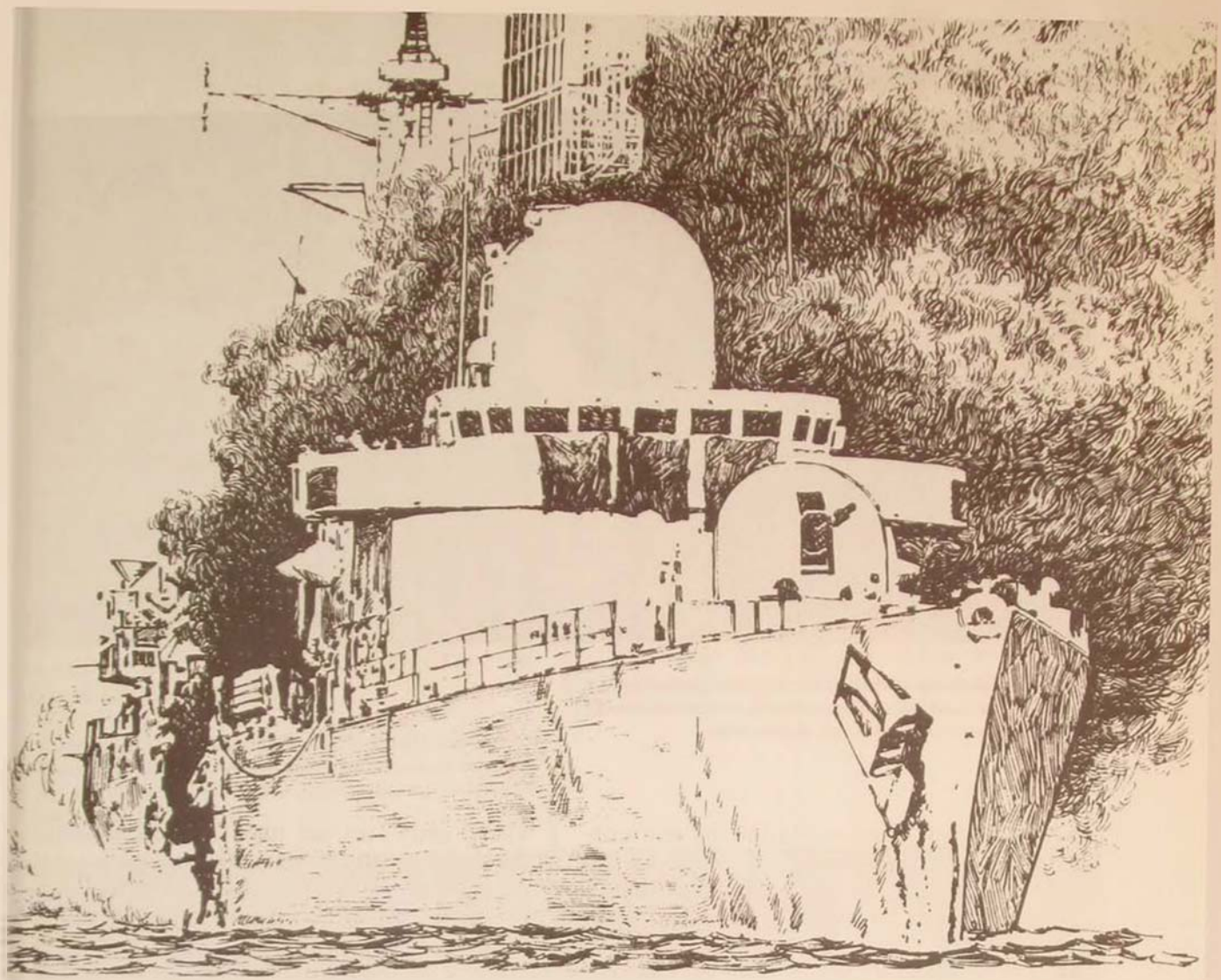
In addition to the Flankers, the Soviets have deployed Mainstays—airborne early warning and control aircraft—to the Murmansk (port in northwest USSR) region.[20] A Soviet version of the USAF's airborne warning and control system (AWACS), the Mainstay can detect remote threats and vector an interceptor such as the Flanker. Its mission is to detect low-flying aircraft and missiles and to help direct fighter operations.[21] Apparently, Mainstays, Flankers, and Backfires will fly in concert on coordinated strike missions. These changes are indicative of the progressive transformation of Soviet air operations. Indeed, the likelihood of finding and fighting unescorted Backfires is quickly diminishing.

Soviet maritime air operations will be further enhanced by the deployment of the *Tblisi*, a large deck carrier that will accommodate about 60 aircraft. Although we are not certain about the numbers and types of planes, the new carrier's inventory apparently includes an upgraded Yak-38 Forger—a vertical and/or short takeoff and landing (VSTOL) aircraft.[22] Further, Rear Adm Thomas A. Brooks, director of US naval intelligence, told members of Congress that the Soviets plan to launch a *second* attack carrier by 1993. Aircraft mentioned for service on these carriers include the MiG-29 Fulcrum, the Su-25 Frogfoot, and the Flanker. However, Admiral Brooks points out that "aircraft carrier compatibility testing with Flanker aircraft was accelerated last summer, most likely to develop a credible air wing by the early 1990s."[23]

Consequently, the assignment of one of these carriers to the Northern Fleet in the early 1990s will allow the Soviets to deploy a carrier battle group to the Norwegian Sea and provide extended combat air patrols for their fleet. With these additional assets, the Soviets will be able to project air power to the North Atlantic and threaten NATO's sea lines of communication. In a recent article in *Military Technology*, US Navy Lt Comdr Joseph Striewe speculated on the composition of this Northern Fleet carrier battle group. Given the current order of battle, he thinks that it would consist of the following ships:

- One *Tblisi* attack carrier.
- One *Kiev*-class carrier.
- One *Kirov*-class battle cruiser.
- Two *Kara*-class crusiers.
- Several *Udaloy/Sovremenny*-class destroyers.
- One *Berezina*-class replenishment ship.[24]

The *Tblisi* and *Kiev* carriers would provide approximately 90 aircraft of one kind or another for fleet defense. In addition, a Soviet carrier battle group situated in the Norwegian Sea would be sailing within the operating radius of land-based Flankers, Mainstays, and Backfires. Thus, by the early 1990s Soviet battle groups will no longer conduct operations outside of a comprehensive air defense screen. The integration of the *Tblisi*—along with Flankers, Backfires, and Mainstays—into Soviet Naval Aviation will transform the



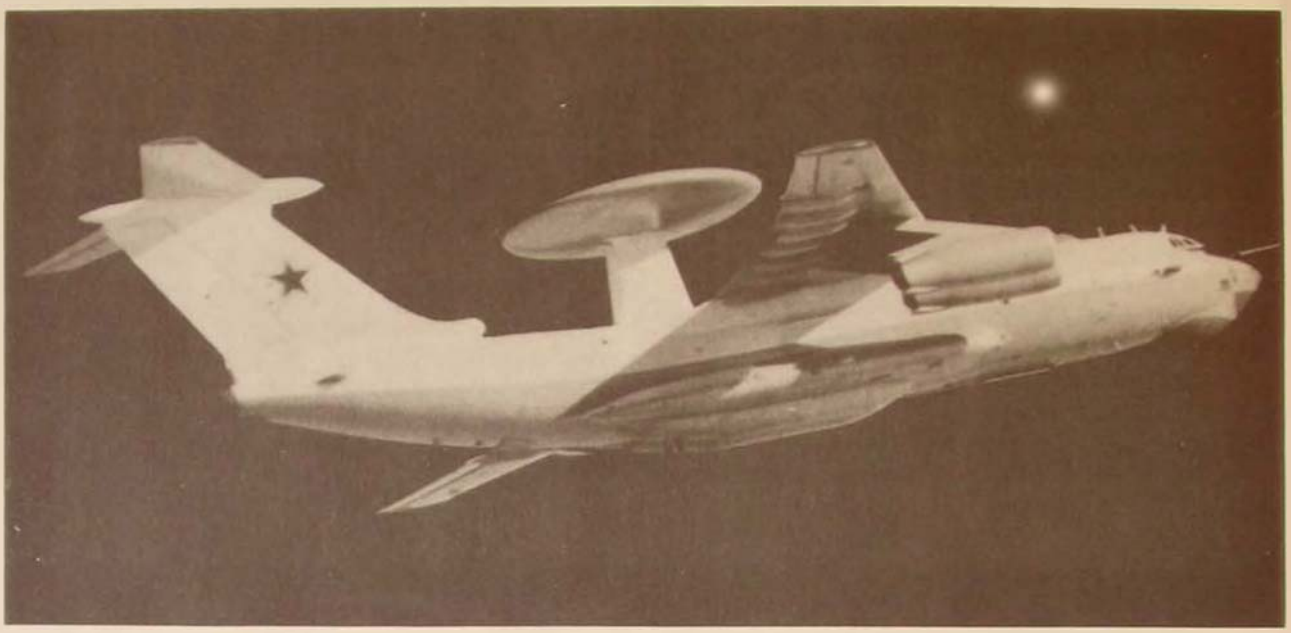
The HMS Sheffield *and other Royal Navy ships were destroyed during the Falklands War by Exocet antiship missiles. This fact did not go unnoticed by Soviet naval planners, who saw it as a validation of their own doctrine of maritime air operations.*

air operations picture in the Norwegian Sea and complicate US and USAF maritime strategy.

Implications for US Maritime Strategy

These improvements in Soviet maritime air operations have two major implications for US maritime strategy. First, contrary to current Soviet pronouncements, there appears to be no apparent change in Soviet naval policies. Second, US military commanders will have to rethink how B-52s, AWACS aircraft, F-15s, and the US striking fleet will counter the new Soviet maritime threat.

The configuration and deployment of the aforementioned Soviet assets indicate that the USSR wishes to extend tactical air coverage at sea and sustain a sea-power building program developed by Adm Sergei Gorshkov, father of the modern Soviet navy. Evidently, the late naval commander in chief's plans for a balanced



The Soviet Mainstay airborne warning and control system aircraft is now used in Soviet naval exercises to control attacks against enemy aircraft and naval surface ships.

navy have not been curtailed by the current Soviet administration. As early as the 1960s, Gorshkov wanted a balanced, blue-water navy which included air assets. In his book *The Sea Power of the State*, Gorshkov claimed that during World War II, the Germans never appreciated how aircraft could complement fleet operations: "The German Command under-estimated the role of aviation in the operations at sea." Indeed, he continued, "This to no small degree was promoted by the resistance of Goering to the creation of naval aviation."[25]

Thus, Gorshkov set out to ensure that naval air would be included in plans for constructing a balanced fleet. Because the Soviets had no aircraft carriers in the late 1960s, they had to use land-based aircraft for distant tactical air coverage of their fleet. In the 1970s under Gorshkov's direction, the Soviets built the first *Kiev*-class aircraft carrier and stationed Yak-38 Forgers on board. However, because Forgers performed poorly, the *Kiev* provided only limited maritime air defense. After launching more of these smaller vessels, the Soviets decided to fulfill a Gorshkov dream by building two large attack carriers.

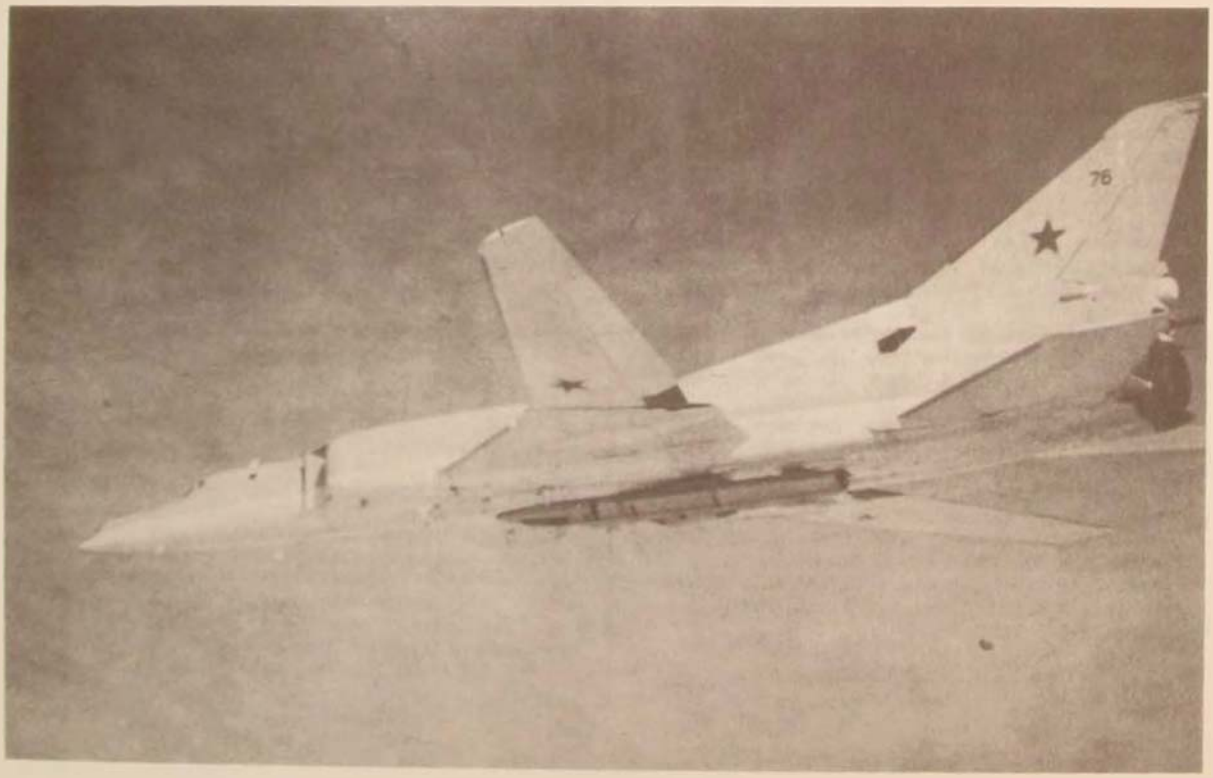
Basically, then, the recent transformation of Soviet maritime air operations is a manifestation of Gorshkov's plan to build a balanced, blue-water navy around an attack carrier battle group. Even though General Secretary Mikhail Gorbachev has offered to scrap older ships and has discussed ways to disarm, the Soviets have not significantly altered their shipbuilding programs. Nor have they abandoned Gorshkov's dream of launching a balanced navy. Indeed, one report claims that the Soviets have started building a third major attack carrier similar to the *Tblisi*.[26] Despite Gorbachev's pronouncements, the deployment of Flankers, Mainstays, and new attack carriers indicates that Soviet naval policies have not changed and that building a balanced navy remains a high priority.

The changes in Soviet maritime air operations also have implications for US maritime doctrine. At present, Air Force and Navy air tactics call for attacking the Backfires before they can launch their missiles. Because Backfires formerly flew without escorts and without long-range radar coverage, Navy F-14s or Air Force F-15s planned to fly straight toward the Backfires and attack them. However, if Flankers—vectored by Mainstays—are to escort Backfires, our old air tactics will not suffice. Obviously, the F-15s and F-14s will have to fight their way through combat air patrols to get to the Backfires. Thus, their success will depend on our ability to destroy or deceive the Mainstays. This in itself is sufficient justification to support the stealth fighter program and the deployment of advanced tactical fighters on board US aircraft carriers.

As mentioned earlier, in Teamwork 88, unescorted B-52s flew Harpoon strikes and mine-laying missions. But if attack carriers provide combat air coverage for Soviet fleets, B-52s will no longer be able to fly without protection. The Air Force, therefore, should consider stationing F-16s and KC-10s at Loring AFB, Maine, and tasking them to fly with the B-52s. After tanking off a KC-10 and receiving vectors from an Iceland-based AWACS, F-16s could accompany B-52s on Harpoon missions and provide air coverage while the bombers are planting minefields. Just as long-range P-51 Mustangs accompanied B-17s over Germany in World War II, so could F-16s from Loring and F-15s from Iceland escort B-52s on future missions against the Soviets.

In most NATO maritime exercises, American carrier battle groups face a simu-

Backfire bombers have become a central part of Soviet antiship operations. Always dangerous, these aircraft are an especially formidable threat now that they enjoy the protection of Soviet sea-based fighter aircraft.



lated enemy comprised primarily of surface ships and land-based aircraft. Seldom, if ever, is the enemy force endowed with the fighting power of an attack carrier. And when AWACS aircraft participate, they are assigned only to the friendly forces. But if the USSR is able to deploy a carrier battle group and Mainstays to the Norwegian Sea, NATO should add these aspects of the Soviet threat to its maritime exercises. Specifically, NATO should screen the simulated enemy carrier with submarines, surface combatants, and aircraft. Furthermore, Air Force E-3As should be used for Mainstays; F-14s, F-15s, or F-18s for Flankers; F-111s for Backfires; and A-6s for Yak-36s. In short, before the Soviets actually deploy their new carrier battle groups, allied maritime air operations need to be tested under realistic conditions.

Although detailed tactics for opposing Soviet carrier battle groups have yet to be perfected, one fact remains clear: the Soviets are upgrading their maritime air operations. In the 1960s they had no carriers and, therefore, relied on their Bears and Badgers. However, the 1970s and the 1980s saw the addition of Backfires and the construction of attack carriers. If two new attack carriers—together with Backfires, Flankers, and Mainstays—are available by the mid-1990s, the Soviets will have substantially enhanced their maritime capabilities. Now is the time to prepare for this threat by adapting US maritime tactics and weapons to effectively counter the improvements in Soviet air operations. □

Notes

1. Supreme Allied Commander Atlantic, Public Affairs Office, "NATO Amphibious Forces Land in Northern Norway" (Norfolk, Va.: Commander in Chief Atlantic, Fleet Compound, 19 September 1988).
2. Tonne Huitfeldt, "Soviet Tu-16 Badgers in Norwegian Sea Exercise," *Jane's Defence Weekly*, 27 June 1987, 1345; Nick Cook, "Soviet Il-76 Pictured over Kola Peninsula," ibid., 12 December 1978, 1338.
3. Peter H. Rasmussen, "The Soviet Naval Air Force: Development, Organization and Capabilities," *International Defense Review*, no. 5 (1978): 689–95.
4. Bruce W. Watson and Marguerite Walton, "*Okean*-75," US Naval Institute *Proceedings*, July 1976, 93–97.
5. Rasmussen, 689–95.
6. John W. Taylor, ed., *Jane's All the World's Aircraft, 1986–87* (London: Jane's Publishing Co., 1987), 267–79.
7. Ibid., 268.,
8. "New Soviet Bombers Fake Strike against U.S. Navy," *Washington Post*, 9 November 1982, 16; "Soviet Backfires Simulate Attacks against U.S. Carrier," *Soviet Aerospace*, 15 November 1982, 70.
9. B. Rodinov and Y. N. Novichkov, "Electronic Warfare in the South Atlantic," *Selected Translations from Morskoi Sbornik*, no. 1 (1983): 61–77.
10. I. Uskov, "Lessons of the Anglo-Argentine Conflict and the Role of Surface Ships in Conflict at Sea," *Selected Translations from Morskoi Sbornik*, no. 11 (1982): 102–13.
11. Richard N. Papworth, *Soviet Navy Reactions to the Falkland Island Conflict*, Defense Technical Information Center Technical Report (Alexandria, Va.: Defense Technical Information Center, 1984), 78–79.
12. "Soviets Building 26–40 Backfires a Year," *Soviet Aerospace*, 21 March 1983, 77–78.
13. Rodney Cowton, "Pact Ships Mass in Atlantic," *The Times* (London), 3 April 1984, 6.
14. R. van Tol, "Soviet Naval Exercises, 1983–85," *Naval Forces*, no. 6 (1986): 18–35.
15. William Smith, "Moscow's Muscle Flexing," *Time*, 16 April 1984, 28–30; Fay Willey, "Strategy: A Test for NATO at Sea," *Newsweek*, 16 April 1984, 46.
16. Walter Andrews, "Soviets' 9-Ship Show Impressed Most," *Washington Times*, 18 April 1985, 4; Richard Gross, "Soviet Naval Forces Simulate US Aircraft Carrier Attack," *Jane's Defence Weekly*, 27 April 1985, 701; Kensuke Ebata, "Speed Is the Key for Soviets in Pacific," ibid., 18 May 1985, 833.
17. Huitfeldt, 1345.
18. "Sukhoi Su-27 Flanker Fighter in Close-up," *Jane's Defence Weekly*, 22 August 1987, 338–39.
19. Marc Liebman, "Flanker Aircraft Threatens Norwegian Sea," *Armed Forces Journal International*, October 1987, 52.
20. Cook, 1338.
21. Ibid.
22. Marc Liebman, "The New Soviet Carrier," *Defense Electronics*, March 1989, 55–60.
23. "Soviets Launch Second Large Aircraft Carrier," *Soviet Aerospace*, 6 March 1989, 1–5.
24. Joseph Striewe, "Soviet Carrier Battle Group on the Horizon?" *Military Technology*, June 1989, 26–31.
25. Adm S. G. Gorshkov, *The Sea Power of the State* (Annapolis, Md.: Naval Institute Press, 1979), 262.
26. Peter Howard, "Soviet Third Carrier Build Confirmed," *Jane's Defence Weekly*, 8 April 1989, 583.

. . . BUT HOW DO I SUBSCRIBE?

EASY . . .

- **Just write the Superintendent of Documents, US Government Printing Office, Washington, D.C. 20402.**
- **Tell him you want to subscribe to AFRP 50–2, *Airpower Journal*, stock number 708-007-00000-5.**
- **Enclose a check for $9.50 ($11.90 for international mail).**
- **Spend a year enjoying four quarterly issues mailed to your home or office.**

net assessment

The Eagle's Talons: The American Experience at War by Col Dennis M. Drew and Dr Donald M. Snow. Maxwell AFB, Alabama 36112-5532: Air University Press, 421 pages, $16.00.

Clausewitz's conclusion that "war is a continuation of political activity by other means" is an often misunderstood or forgotten dictum. In *The Eagle's Talons*, Col Dennis Drew and Dr Donald Snow, both past instructors at the Air War College, examine America's military history in light of Clausewitz's adage. Directed at those individuals concerned with national security affairs (both civilian and military), the book attempts to describe the complex interaction between political and military factors in America's past in order to provide some insights on how America might view the use of force in the future.

The book's introductory chapter, "War and Political Purpose," alone makes this book worth reading. While designed primarily to explain the authors' methodology and chapter organization, it provides a detailed and cogent argument for the examination of America's military experience as an integration of political, military, and societal factors. In general, America has gone to and conducted war with precious little foresight, allowing its use of force to be directed by very narrow public perception (or indignation) along with very limited thought to the political motivations and consequences of its actions. Contributing to this haphazard understanding of the uses of military force are myths of American military prowess and purity of motive. Further complicating the problem is the very real conflict between an antimilitary society and the institutions the society has created to protect it. The authors display a keen understanding of these phenomena and thoroughly examine them in the context of each of America's wars.

Following this introductory chapter, the book is organized chronologically and devotes a chapter to each of America's major wars. Each chapter is subdivided into sections on "Issues and Events," "Political Objective," "Military Objectives and Strategy," "Political Considerations," "Military Technology and Technique," "Military Conduct," and "Better State of the Peace." This is not the book for people who want a new and detailed survey of American military history. The authors provide just enough background—gleaned from reputable secondary sources—to illuminate their areas of emphasis.

Given the book's emphasis on interacting political and military factors, it is no surprise that the most interesting (some would argue, most important) chapters in the book deal with America's "limited" wars. While America has found it much more acceptable to relate "total" wars to its myths and feelings about the use of military force, such has not been the case with "limited" conflicts. Indeed, it is no accident that the chapter preceding the book's summary addresses America's minor wars: the War of 1812, the Mexican War, and the Spanish-American War. With the discussion of these smaller and more controversial conflicts still fresh, the authors then bring home the point that America in the twentieth century has fought and is facing more of these wars of limited scope and consequence.

In their last chapter, Drew and Snow describe and comment on the situation America faces as she closes out the century. They conclude that we face a world where many of our images of the way we fight and why we fight simply will not apply. Their argument is that both political and military leaders need to understand this situation so that American military policy can adapt to this reality.

Maj Budd A. Jones, Jr., USAF
USAF Academy, Colorado

America's First Black General: General Benjamin O. Davis, Sr., 1880–1970 by Marvin E. Fletcher. Lawrence, Kansas 66045: University Press of Kansas, 1989, 226 pages, $22.50.

Given the title of Marvin Fletcher's book, I was predisposed to believe that the author's account would tend to extrapolation rather than specificity, to heroics rather than to the pedes-

trian. However, the biography of Brig Gen Benjamin O. Davis is a very detailed recitation of the actions and motivations of a unique individual, drawn from credibly annotated, contemporary sources. A picture clearly and succinctly emerges of an officer driven by duty to family, to officership, to black members of the military, and to the US Army. Aside from the obvious and important historical significance of the general's 50-year military career, the book explores a pervasive and interesting theme for current officers to follow: the actions of a man operating in the classic "officer environment" (i.e., relying on personal standards to set goals and analyze results, despite the absence of useful feedback).

During his career, which began as an officer in the volunteer infantry during the Spanish-American War, General Davis held many positions, ranging from the predictable (professor of military science and tactics at Tuskegee Institute in Alabama) to the exotic (military attaché to Liberia). Because the Army was still oppressively segregated, the salient factor that determined General Davis's assignments was the color of his skin. Command jobs remained rare because of the possibility of subordinating midlevel white officers to a senior black officer. Throughout his career, General Davis was prone to lobby for the more desirable jobs or those that had more potential for promotion. Although this tendency is at first disconcerting, it becomes apparent that he was simply doing his duty: "In his own mind he was first of all an Army officer, then a black man. For the black community, he was first of all a black." In this sense, General Davis was maximizing his value to the Army and to the black community simultaneously. Given the institutionalized bigotry of the Army bureaucracy, these instances of apparent careerism become examples of admirable initiative.

Upon his promotion to brigadier general during World War II, General Davis became involved in the most compelling portion of his career—advising the War Department on how to handle racial issues. Although he was the only black general and one of the key, firsthand observers of racially generated problems, he nevertheless remained the consummate Army officer, making his recommendations clearly and unequivocally. If they were rejected, he simply moved on. Certainly, the seeds for postwar integration were sown largely through the practical, quiet approach of General Davis.

The book's reserved style and avoidance of unwarranted conclusions add a certain dignity that is much in keeping with what General Davis must have been like. Furthermore, the foreword by Lt Gen Benjamin O. Davis, Jr., adds perspective and support to the biography. This book should be considered a "must read" for anyone interested in the details and personalities involved in the racial integration of the American military.

Capt Eric C. Anderson, USAF
Duluth, Minnesota

Edward Lansdale: The Unquiet American by Cecil B. Currey. Boston 02108: Houghton Mifflin Co., 1988, 416 pages, $24.95.

In spite of the fact that for nearly 30 years Maj Gen Edward G. Lansdale's name has been synonymous with nation building and counterinsurgency, he is relatively unknown in most Air Force circles. One reason is that most of his career was spent as a nonrated intelligence officer on detached duty. The other may be that his counterinsurgency specialty has been forced into the shadows by the Vietnam experience.

Currey does an admirable job of dispassionately explaining Lansdale and his career. Although it is clear that the author admires his subject, he captures Lansdale's strengths and failings without glorifying the former or excusing the latter. Unfortunately, Currey spends little time on the early years of Lansdale's life. The reader must be content knowing that from his youth, Lansdale projected a likable mixture of artistic talent, military interest, and an innate ability to sell. These qualities led to his achieving a reasonable level of success as an advertising executive before World War II.

It is the recounting of Lansdale's firing from this job which gives the initial insight into Lansdale the man. Following Pearl Harbor, he made the decision to activate his reserve commission. His employer disagreed in principle, and Lansdale's intolerant rebuttal resulted in an immediate, though mutually regretted, dismissal.

Although physicians initially found him medically unqualified for duty, he relied on personal contacts to gain his commission. This ability to overcome circumstance by capitalizing on his network of acquaintances became

one of his trademarks. Following the war, he successfully transitioned to the Air Force in search of a less restrictive environment. His wartime experience led to an assignment to the Strategic Intelligence School at Lowry Air Force Base, Colorado.

While there, Lansdale's penchant for subordinating convention to what he felt was right led to evaluations which ranged from "Mayhem's going on in your class" to "A good man for air attaché, staff, or liaison duty." Although his selection to attend Academic Instructor School at Craig AFB, Alabama, threatened to seal his fate, he returned to Lowry by way of Washington, D.C., after completing the course. Once again Lansdale achieved the impossible: less than a month later, he received orders to the Office of Policy Coordination in Washington.

This secret organization was the direct descendant of the Office of Strategic Services (OSS). Lansdale immediately settled in and began working on covert operations aimed at offsetting Soviet third-world advances. He became a self-taught expert on psychological operations, seeing this field as a means to help counter the Hukbalahap rebellion in the Philippines. He convinced the Philippine attaché to route returning military officers through Washington, where he could teach them the art. During this period, a friend introduced him to Ramon Magsaysay, a young Philippine congressman. Their ensuing friendship literally changed the course of history.

When Lansdale returned to the Philippines, he and Magsaysay would gain lasting fame and much deserved credit for establishing democracy in that country. This high-water mark of Lansdale's career resulted in his being characterized in William J. Lederer and Eugene Burdick's *The Ugly American* and Graham Greene's *The Quiet American*. Although these portraits brought him fame, they focused attention on the what and how of his activities. The spotlight resulted in unrealistic expectations on the part of supporters and determined opposition by his detractors. Years later in Vietnam, he became the confidant of President Ngo Dinh Diem and attempted to re-create his success in the Philippines. But too many people knew him too well, and his assignment produced no lasting results.

General Lansdale later attempted to put his career into focus for the American public with his book *In the Midst of Wars*. Although it provides insight into his character, it necessarily distorted reality in order to obscure his Central Intelligence Agency (CIA) affiliation. Currey's scholarly treatment of Lansdale provides a counterpoint which leads to a deeper understanding and appreciation of his subject yet retains a quality of excitement. To understand Lansdale, you should read both books, but it is Currey's work that will become a classic.

Lt Col T. K. Kearney, USAF
Headquarters USAF

Soviet Military Doctrine: Continuity, Formulation, and Dissemination by Harriet Fast Scott and William F. Scott. Boulder, Colorado 80301: Westview Press, 1988, 295 pages, $45.00.

Anyone who follows *Air Force Magazine* knows the work of Harriet Fast Scott and William F. Scott, the premier experts on Soviet military affairs. Harriet Scott, a member of the General Advisory Committee on Arms Control and Disarmament, and her husband William spent four years with the US embassy in Moscow—he as the US air attaché. They have coauthored *The Soviet Art of War* and the classic *The Armed Forces of the USSR* (now in its third edition). *Soviet Military Doctrine* fulfills the prediction that this couple would write the definitive work on Soviet military doctrine. It is the most complete treatment of the subject currently in print.

The title identifies the book's three major divisions. The first part is "Continuity and Change in Soviet Military Doctrine," which traces Soviet doctrine from its formulation in the 1917 revolution, through transitional phases during the eras of Stalin, Khrushchev, and Brezhnev, to its present form now that the USSR is a military superpower. The final chapter of this section convincingly warns that the current "restructuring" is not simply an attempt to improve the living standards of the Soviet population at the expense of the military but a recognition by the Soviet leadership "that the total correlation of forces—economic, scientific-technical, moral-political, and military—must be kept in their [the Soviets] favor" and that this correlation has been slipping away.

The second part, "Formulation and Dissemination of Soviet Military Doctrine," deals

with the roles of both the Communist party and the Soviet government in the military doctrine process. Here, through an exploration of those roles, the Scotts make a strong argument that any true fundamental change in the Communist party and its administrative arm, the Soviet government, will most certainly be reflected in Soviet military writings approved for dissemination to Soviet officers. The current doctrinal writings do not support the notion of a fundamental Soviet move to a defensive operational doctrine. Politically, the Soviet view is that their doctrine has always been defensive. The first two parts lay a strong foundation for the book's third and final part, "Conclusions: Continuity or Change?"

In the conclusion, the Scotts develop a most logical framework for placing *perestroika* (restructuring) in perspective and help the reader appreciate not only whether fundamental changes are taking place in the Soviet Union but whether they are even possible. This section should be mandatory reading in all US and allied war colleges, as the following paragraph demonstrates:

> Before actions are based on such perceptions of Soviet behavior, it is more important than ever before that defense planners outside the Soviet orbit examine the total Soviet concept on military doctrine and its purpose.... Soviet military doctrine transcends the Soviet Armed Forces. It impacts all aspects of Soviet life, whether it be the military-patriotic education of Soviet youth, the location of new industries, or scientific exchanges with the noncommunist world. Soviet military doctrine provides the overall framework for preparing the country against the possibility of a future war. It is concerned with the very essence of war, its aims and nature, the weapons that will be used as well as how they will be used.

Regardless of when it appeared, a book of this quality and scope would be an important work. However, recent events (the Intermediate-range Nuclear Forces treaty and the announcement of General Secretary Gorbachev's unilateral conventional-force reductions), ongoing Soviet *perestroika*, and upcoming conventional arms negotiations in Vienna magnify its importance. Indeed, *Soviet Military Doctrine* is a volume that all serious Soviet scholars, defense analysts, national security policymakers, and military professionals must add to their library. The book is highly informative and extremely well documented (700 citations for 262 pages of text), with excellent appendices and a bibliography worthy of a doctoral dissertation, all of which make it a top-notch reference.

Lt Col Vincent J. Landry, Jr., USAF
Columbus, Ohio

George C. Marshall: Soldier-Statesman of the American Century by Mark A. Stoler. Boston 02111: Twayne Publishers, 1989, 239 pages, $24.95.

Mark Stoler solves the biographer's crucial problem—the selection of a suitable subject—by choosing George C. Marshall, the most honored American military man since George Washington—a man whose character and achievements should be studied and emulated by all true professionals. In doing so, however, he creates another problem: saying something new about General Marshall, especially in the light of the publication just three years ago of the fourth and final volume of the definitive Marshall biography by Forrest Pogue.

Stoler acknowledges his debt to Pogue in a graceful tribute that begins a long (18-page) bibliographic essay. This addendum, by the way, is frank, thoughtful, and very useful. But the approximately 200 pages of Stoler's text are not just a condensation of the more than 2,000 pages of the Pogue text. Rather, they paint a distinctive picture of a man whom Stoler admires and whose times he understands.

The necessary process of selection and the resultant juxtaposition of events in a shorter work can be helpful in comparing incidents that happened over a long period of time. For example, consider the famous scene in 1943 when Marshall tells Winston Churchill that (in regard to British demands for action against the island of Rhodes) "not one American soldier is going to die on that goddamned beach." This is made much more understandable when Stoler explains that Marshall—only a brigadier general—did the same thing with FDR in 1938. Furthermore, all these are echoes of an even earlier episode when Major Marshall stood up to Gen John ("Black Jack") Pershing in October 1917! When we read Pogue, we understand an incident more profoundly but often have difficulty relating it to an event that occurred two or three volumes earlier.

When he is not creating insights by intelligent selection and juxtaposition, Stoler states them directly. For example, he contends that what Marshall was doing in 1950 as secretary

of defense—organizing an American Army—was what he had done as Army chief of staff in 1939–43. This is one of many shrewd observations that are hard to get out of one's mind. Further, the author makes a startling comparison between General Marshall and George Washington. Rather than comparing the obvious traits of character and unselfish service, Stoler notes that in picking his associates in the State Department in 1947, Marshall followed the same policy as Washington did in choosing our first cabinet.

Stoler presents the general as a more vulnerable personality than does Pogue. Stoler's Marshall is more ambitious and strident than the man we are accustomed to read about. Instead of the magisterial Olympian of the later years, the author describes a young man who recognized his own abilities and worth, who grew sick from intense periods of overwork and strain, who worried about ever getting a chance to accomplish anything, and who wrestled with a fierce temper. (But even when it flared, the target was always something akin to unfairness, disloyalty, callousness, or ignorance.) After reading Stoler's account, we are better able to appreciate Marshall's achievement in mastering himself. He channeled his intensity into a commanding force which everyone who came into contact with him recognized. He then wielded this power for the good of his country and the world.

This is a fine book about a great man. Read it for its strengths and insights, but don't forget the four-volume work by Forrest Pogue. Both books are appropriate for us to study, and each reinforces our understanding of the other and our appreciation of George Marshall, perhaps the noblest American.

Col George W. Tiller, USAF
Maxwell AFB, Alabama

Men of the Luftwaffe by Samuel W. Mitcham, Jr. Novato, California 94949: Presidio Press, 1988, 356 pages, $18.95.

Did the Luftwaffe lose the war because of human failure or because of technological failure? In *Men of the Luftwaffe*, Samuel W. Mitcham, Jr., comes down hard on the side of human failure. He examines each of the Luftwaffe's key men in detail. What emerges is a fascinating portrait of leaders who did not lead, managers who did not manage, and an organization crippled by drug addiction, alcoholism, assorted psychiatric pathologies, and just plain incompetence.

At the top was Hermann Goering, an enigma, a man of great contradictions, a decorated World War I fighter ace, and a drug addict. It is hard to imagine anyone more poorly suited for the job. He consistently overestimated his capabilities by a wide margin, typically promising what he could not deliver. His command system was fragmented and without unity. He often issued orders to the various commands through his adjutants, completely bypassing the chief of the General Staff of the Luftwaffe. He thrived on chaos and confusion and was skillful at encouraging his enemies to fight each other rather than him.

Equally disastrous was the selection in 1936 of Ernst Udet as chief of the Luftwaffe's Technical Office, the agency responsible for aircraft development and procurement. Like his crony Goering, Udet was totally unsuited for the job. Although the leading German ace to survive World War I, he was completely lacking in managerial aptitude or skill. He was addicted to both drugs and alcohol and was completely undisciplined in his work habits. He had a knack for selecting subordinates as incompetent as he and was often unavailable for making decisions for weeks at a time. At one point he had direct responsibility for 26 departments, a nearly hopeless task for even the best manager.

Mitcham provides many other examples of such leadership. The ultimate effect was disastrous for the Luftwaffe in the late 1930s, a critical time in the evolution of aviation technology. A whole new generation of aircraft was under development, and important decisions had to be made. More often than not, however, the top men of the Luftwaffe focused their energies on power struggles and internal bickering. By the start of World War II, the Technical Office was out of control, and Germany was already losing its edge in military aircraft technology.

By 1940 the Luftwaffe was placing its future hopes on four basic aircraft types—the Me-109, which proved its utility through war's end, and three others that proved to be less than completely successful, if not outright failures. The Ju-88 twin-engine bomber, sometimes referred to as the "flying barn door," never lived up to expectations. Attempts to add a dive-bombing capability increased the aircraft's weight substantially, thus reducing its range and speed.

The He-177, one of Germany's few attempts to produce a long-range bomber, was a complete disaster. It, too, had to be able to dive-bomb, a requirement which doubled the aircraft's weight. It had a nasty tendency to explode in flight for no apparent reason and to fall apart during dives. It was said to be deadlier to its crews than to the enemy. The He-177 was abruptly withdrawn from production when its numerous technical problems proved unsolvable. The Me-210, which was to replace the Me-110, represented another major disappointment. Its extremely poor handling characteristics made it a virtual death trap. Like the He-177, it was canceled before significant numbers were built.

The failure of the Me-210 and He-177 came at considerable expense. Scarce resources were squandered at a time when Germany could ill afford such waste. And precious time, one of the most valuable of all commodities during a war, was spent on dead-end projects. As a result, by 1942 the Luftwaffe was operating with mostly obsolete combat aircraft designs.

In addition to examining the technological issues, Mitcham does an excellent job of highlighting other significant shortcomings which contributed to the Luftwaffe's defeat: the overemphasis on ground support operations and neglect of strategic bombing, the obsession with dive bombing—which ruined more than one good aircraft design—and the failure to prepare for a long war, to name just a few. If there are any heroes in this story, they are the individual pilots who, by skill alone, maintained air superiority in some sectors and at least parity in others until late in the war. It was the loss of these men that ultimately proved fatal to the Luftwaffe.

Mitcham's account is well written and well worth the time. As a case study in leadership and management failure, it offers timeless lessons. It is must reading for the student of military history.

Maj James C. Ruehrmund, Jr., USAFR
Richmond, Virginia

Fighter Missions by Bill Gunston and Lindsay Peacock. New York 10003: Orion Books, 1989, 207 pages, $24.95.

A glance at *Fighter Missions* on the bookshelf might lead you to believe that it is just another coffee-table book about modern fighter aircraft. But even a brief examination confirms that it has a fresh approach, while a close reading reveals much food for thought.

The aim of the book is to expose the reader to modern air combat missions from the cockpit perspective. The authors cover seven missions ranging from air superiority to antitank in as many chapters, introducing each one with a concise but informative survey of the mission's history. All but the chapter on the maritime mission conclude with a rough comparison of aircraft that currently perform the mission. The bulk of each chapter consists of one or two hypothetical descriptions of combat missions occurring in contemporary, conventional-war scenarios. The F-111 mission, however, is a brief reconstruction of Operation Eldorado Canyon—the attack on Tripoli, Libya.

Fighter Missions succeeds in exposing the reader to contemporary fighter operations in a broad sense. Each historical survey is rich in fascinating details, many of them obscure or novel. Furthermore, the authors are not shy about giving their opinions in the discussions of contemporary mission challenges: "One has only to apply one's mind to the problem for about three consecutive seconds to see that such an aircraft is not merely pushing its luck but is sheer nonsense" (p. 89). Mission scenarios are plausible but arguably rosy in outcome.

Knowledgeable readers may be distracted by details in the photographs that suggest a lack of authenticity (e.g., training configurations and small arms with blank adapters). Aircrew members and controllers will find the dialogues loose and chatty. But most readers are likely to be confused by the book's disjointed layout: because the text is repeatedly interrupted by photos and captions, it is sometimes difficult to tell where the narrative resumes. Nevertheless, this volume is a useful introduction for readers interested in understanding air combat missions.

Maj Charles M. Westenhoff, USAF
Maxwell AFB, Alabama

Preventing World War III: A Realistic Grand Strategy by David M. Abshire. New York 10022: Harper & Row, 331 pages, $19.95.

David Abshire is a West Point graduate who served as a company commander in Korea, earned a PhD in history from Georgetown Uni-

versity, was a staff member with the US House of Representatives, helped found the Center for Strategic and International Studies in Washington, D.C., served as chairman of the US Board for International Broadcasting, and was a member of the President's Foreign Intelligence Advisory Board. He has also served as an assistant secretary of state, US ambassador to the North Atlantic Treaty Organization (NATO), and—most recently—special counselor to President Ronald Reagan for the Iran/Contra inquiry, with full Cabinet rank.

You would expect someone of this breadth and depth of experience to write a book with the potential to stand as a classic on strategy and international affairs. This book won't disappoint you. From his explanations of how events and decisions shaped the world as we know it today to his thumbnail sketches of world leaders and major political players, Abshire offers a unique insight into the workings of our national government, the NATO alliance, and foreign policy that only someone of his experience can provide.

The book begins with an outstanding historical analysis of why wars begin. Dr Abshire, former adjunct professor of history, takes us from the post-Napoleonic Concert of Europe through World Wars I and II, through the formation of NATO, up to today's world political situation. According to Abshire, wars begin through uncertainty and miscalculation. To avoid World War III, we must remove as much uncertainty as possible. He argues that as the Soviet Union improves its technology and its strategic nuclear forces, a continued NATO reliance on nuclear deterrence will eventually lead to uncertainty and miscalculation. If we continue to rely on nuclear deterrence, the Soviets will improve to the point that they believe they can deter us from responding to a Warsaw Pact attack on NATO. He draws a parallel between US reliance on nuclear deterrence today and the reliance of Europe in 1914 on the Concert of Europe, which had prevented a general war for almost 100 years. As Abshire puts it, "Just believe in that deterrent, it was felt, and everything would be all right. All of these assumptions proved tragically wrong.... The upheavals and depressions provoked by World War I ultimately were responsible for the rise of a Communist Soviet Union and a Nazi Germany. The first steps on the road to World War II had been taken." He feels that today we are in danger of walking into the same trap. As the Soviets gain more Western technology and deploy newer and better weapon systems, they may eventually come to believe that we wouldn't dare challenge them should they decide to seize the economic, industrial, and technological assets of Western Europe. Abshire presents this as the most likely scenario for the start of World War III.

His prescription is a call for an overall grand strategy aimed at making the United States and NATO stronger, both militarily and economically. Abshire believes that a coordinated overall strategy should incorporate the following: political strategy, public relations strategy, deterrence strategy, resources strategy, technology strategy, third-world strategy, and economic strategy. He points to NATO as an example of an almost perfect vehicle (in structure) for implementing a grand strategy. Indeed, Ambassador Abshire is a most vocal advocate of the NATO alliance. One of the heroes of the book is Lord Peter Carrington, who until recently was NATO's secretary general. Another is Senator Sam Nunn of Georgia. These two combined to help awaken the alliance to the need for less reliance on the US nuclear umbrella and more commitment by alliance members to conventional readiness.

A military capability (both nuclear and conventional) second to none, a strong partnership with our allies, a strong economy, and a grand strategy designed to attain and sustain these strengths will convince the Soviets that they cannot win by starting a war. Thus, the misconceptions and miscalculations are removed. Abshire's clarion call must be heeded. Decision makers and policymakers must read this book. It is thoughtful, incisive, and beneficial to anyone who wants to understand strategy and its role in our complex world.

Capt Albert T. Mackey, Jr., USAF
Edwards AFB, California

Command of the Seas by John F. Lehman, Jr. New York 10017: Charles Scribner's Sons, 1989, 320 pages, $21.95.

No service benefited more from the Reagan presidency than the United States Navy, and few people played as critical a role in its growth and application as John Lehman, the secretary of the Navy for most of that period. The administration's determination to actively counter Communist incursions throughout the

third world and punish state-sponsored terrorism hinged on the capabilities of a large, blue-water Navy. This ability to responsively project force expressed itself over and over again, from Grenada to Libya. The rebuilding of the Navy and the secretary's less-than-low profile guaranteed that both the Navy and Lehman served as the frequent focal points for controversy. *Command of the Seas*, subtitled *Building the Six Hundred Ship Navy*, presents Lehman's side of the story.

In doing so, the author addresses a mind-boggling range of topics, from the Pentagon bureaucracy, the budgetary process, shipbuilding, and naval combat operations, to the life and times of Grace Kelly and other rich and famous people. A photo section that includes snapshots of the author with Tom Cruise and other notables does not enhance the image of the book as serious reading. It is this broad sweep, whereby Lehman discusses the influence of Adm Hyman Rickover on nuclear reactor design in one moment and presents an embarrassing kiss-and-tell account of his forced retirement in the next, that made reading the book an uneven and often unpleasant experience. Lehman seems to be in a hurry to vindicate himself and his opinions. This alerted me to the fact that *Command of the Seas* was not going to be dry, lifeless history (if there is such a thing) and that Lehman would have a strongly held, divergent opinion on just about everything. I do not imply that the relationship between Lehman and the defense establishment was one-sided. Evidently, the Department of the Navy has in fact devoted itself to erasing every last vestige of Lehman's reform. What is clear is that John Lehman has written a fascinating, informative, provocative, but frequently frustrating book. My strong impressions were, no doubt, exacerbated by his schizophrenic writing, which alternates between terse, elegant prose, and the style of Harold Robbins.

I suppose the point is that the personality of the author overpowers the book. I found it difficult to objectively evaluate his writing without developing strong and often unfavorable impressions of the man. It is ironic that this is largely due to a section of the book that describes his earlier life as a prominent socialite, Cambridge man, and so forth. He, no doubt, included it to let us know what John Lehman the man is like. I suspect that he is successful in this, but we just do not like what we see. He comes across in a self-congratulatory, nearly Messianic style that finds its ultimate expression with the author's likening himself to Paul on the road to Damascus. It is easy to read this book and dismiss it because of the overbearing personality of the author. Doing so, however, would be an unfortunate mistake. All of the fluff and bravado belie a serious and significant book.

Take the pain, and read it. His dissertation on naval strategy, focusing on eight principles of maritime strategy, would be must reading even if Lehman had nothing else to say. Fortunately, there is much more. Every military officer would be generously rewarded for reading and understanding even a few of the significant issues Lehman raises. Your perseverance in weeding through the book to find them is well worth the effort. My point is that not reading *Command of the Seas* will hurt you more than it will John Lehman. I only wish that he had made it easier for us.

Maj Bill Nikides, USAF
Langley AFB, Virginia

Vietnam: Strategy for a Stalemate by F. Charles Parker IV. New York 10023: Paragon House, 1989, 257 pages, $19.95.

Any work on Vietnam that receives encomiums from both Richard Nixon and Eugene McCarthy is bound to be unusual, and this one lives up to that billing. Its uniqueness is not that it is an eccentric work but a deeply provocative one. Parker's argument is clear and cogently stated throughout the book. First, the strategic conceptions—regarding the USSR, the People's Republic of China, and North Vietnam—under which the United States entered into the Vietnam War after 1963 were absolutely at odds with the reality of the situation. Second, the US had a strategy for winning the war, devised by Secretary of Defense Robert McNamara. But McNamara unilaterally abandoned it in August 1967 because the USSR had begun to catch up with US strategic might. However, he and President Lyndon Johnson did this without telling the American people. To the extent that these arguments are true, they will undoubtedly break the heart of any reader. Basically, the strategy of the US was to kill Vietcong and troops of the North Vietnamese army by rapidly building up men and firepower on our side faster than the enemy could replace their casualties. This strategy was

to go in phases: (1) arrest the slide to defeat that seemed ever closer in 1963–65, (2) stabilize the situation, and (3) move on to victory by 1968 (the year of the presidential election). Thus, war's imperatives were sacrificed to the wholly unstrategic requirements of a presidential election and to the macabre body-count phenomenon.

The choice of 1968 was deliberate; it governed strategy in the field through the Johnson administration. Moreover, the administration refused to mobilize troops and reservists, despite the urgings of the Joint Chiefs of Staff (JCS) to do so and fight a real war. Yet, the administration constantly berated the JCS for not moving faster in building up the requisite number of men and firepower called for by this strategy. In effect, Johnson and McNamara expected Americans to die for a war in Vietnam but not pay for it by reducing their standard of living. Such a craven estimation of the home front undoubtedly shaped the public's eruption against an administration which—it rightly believed—had lied to it.

According to Parker, this strategy rested upon the assumption that the USSR exerted a moderating influence on North Vietnam, while China pushed it forward. In fact, this view completely misread the evolving nature of the Sino-Soviet clash—which was moving to its apogee during 1963–69—as well as the motives of China and the USSR. Moscow was delighted to see the US fall deeper into the mire. In fact, when the USSR realized it was not directly threatened, it proffered ever-greater amounts of equipment to Hanoi. This alone enabled North Vietnam to provision its troops and air defense forces. The Soviets did so to augment the US threat to China, a situation that Moscow harped upon in order to exert pressure on China and anti-Mao factions to rejoin the socialist community. Mao, on the other hand, disparaged the American threat and, if anything, began making overtures to the US in 1963! In addition, his efforts were compromised by the group who saw US actions as a threat and suggested more harmony with Moscow. Thus, a major contributing factor in the eruption of the Cultural Revolution in 1965–66 was the Vietnam War and its impact upon the superpower triangle. The Johnson administration totally misread these overtures by Mao and thus slipped into a disaster.

Clearly, this is a controversial book, and only someone who has mastered the politics of all the protagonists here (Hanoi, Washington, Moscow, and Beijing) can refute or validate it. Parker's passion is evident and so are his heroes and villains, the latter being McNamara and the "brandy-sipping journalists" who turned the victory of Tet into a defeat. The arguments brought by Parker will resound in the literature for some time to come as they contradict much of the debate around American policies in Vietnam (e.g., the issue of whether we had a viable strategy, the role of the Soviet Union, etc.).

In his review, Eugene McCarthy noted that he would take issue with several interpretive points raised by the book. Undoubtedly, so will many others. That fact makes this much more than just a worthwhile read. Rather, it is must reading for students of the international politics of the war in Vietnam.

Dr Stephen Blank
Carlisle Barracks, Pennsylvania

China's Nuclear Weapons Strategy: Tradition within Evolution by Chong-Pin Lin. Lexington, Massachusetts 02173: Lexington Books, 1988, 273 pages, $40.00.

This book is clearly intended for serious scholars of China's nuclear weapons strategy. From a research perspective, it provides a meticulous basis for further study. Perhaps as valuable as the author's conclusions are 132 pages of appendices, a glossary, notes, and a bibliography of both English and Chinese sources.

The author, a graduate of National Taiwan University, successfully defended this work as a PhD dissertation for Georgetown University. As one might expect of a published doctoral thesis, readability suffers, and it may not appeal to the broad military audience.

In response to the hypothesis "Why doesn't China have an easily quantifiable, clearly defined, nuclear weapons strategy?" the author contends that Beijing does have a strategy, but it doesn't look like one from the Western point of view. Rather, China's nuclear weapons strategy is an outgrowth of "Chinese strategic tradition" steeped in 4,000 years of military strategic principles. The author details several tenets, even more fundamental than mass, defense, and deception espoused by Sun Zi (Sun Tzu). To understand Chinese strategy, nuclear or oth-

erwise, one must be aware of integrated multiplicity and dualism, which include simultaneous application of binary opposites. For example, surprise and consistency or indirect and direct strategies are seemingly applied at odds with each other.

Consider also the traditional Chinese principle of indirection, which involves the integration of negativism and minimalism. Negative motivation is the opposite of a pep talk (e.g., burning your own troop-carrying boats after your assault forces debark, thereby forcing them to fight a surrounding superior force). Minimalism is the principle of the inferior being victorious over the superior. For the sake of simplicity, think of the skill employed by commanders as they tactically concentrate a smaller force to defeat a numerically superior force. At the strategic level, consider minimalism as an aversion for escalating a conflict beyond the means required to accomplish the end, which roughly equates to the Western conception of deterrence. The People's Liberation Army and the Chinese Red Army continued to apply such traditional principles into the twentieth century, forming the basis of a nuclear strategy.

Not only does China have a nuclear strategy but also the author contends that it began in an effort to regain national self-esteem at least 10 years prior to China's first detonation of a nuclear weapon. The strategy is uniquely Chinese, with no implicit Western comparison. It evolved in the "logic of deterrence by denial" but does not go as far as the Western connotation of war fighting, which implies a much larger "quantitative dimension." Additionally, "Beijing will continue to minimize, through the art of ambiguity, the perceived scope of its strategic and grand-strategic goals that are directly or indirectly supported by its nuclear weaponry." China's nuclear weapons strategy is "ultimately a counterstrategy, targeting the nuclear weapons at the mind of the enemy's strategy-maker."

In short, what you see is not necessarily what you get. For hundreds of centuries, the Chinese have often done the unexpected. No matter how the West plays the China card, Beijing isn't going to allow a clear peek at the strategic cards it holds.

If you're really up on Chinese strategy or can easily sort through a concluding sentence which states that "principles can be formulated appropriately to avoid nondiscriminatory universality and short-lived particularity," then this book is for you. However, this reviewer believes that a conclusion summarizing the ambiguity of Chinese strategy could be a little less ambiguous. Some excellent points in this book need to be coaxed into a more digestible form. The distinguished professional military education faculty should consider challenging their best and brightest students to use this book as a reference or an excerpted source for their comparative nuclear strategy curriculum. It will serve the force well.

Lt Col Dion W. Johnson, USAF
Camp H. M. Smith, Hawaii

NATO Strategy and Nuclear Defense by Carl H. Amme. Westport, Connecticut 06881: Greenwood Press, 1988, 189 pages, $37.95.

Carl Amme presents a tightly reasoned argument for the use of nuclear weapons in a doctrine of flexible response for the defensive strategy of the North Atlantic Alliance. He focuses his discussion on the political and strategic problems facing the US and Western European nations. Currently, deterrence in Europe is created by a combination of conventional forces and tactical nuclear weapons, a posture more credible than the deterrence created by the US strategic triad, which is remote from the Central European battlefield. Furthermore, US doctrine does not dictate the use of strategic nuclear weapons on the tactical battlefield. But US doctrine is not the only force at work. Each of the principal nations has its own strategic concepts, which are often at odds with each other.

NATO's flexible response—conventional forces to thwart a border crossing and tactical nuclear weapons to stop the attack if the conventional forces fail—has different meanings to France and the United Kingdom (which have independent nuclear forces) and to West Germany (which seems destined to serve as the host nation for any future war in Europe). West Germany's policy of *Ostpolitik* with East Germany and the USSR has strained its relations with the US. The situation was exacerbated by President Jimmy Carter's decision not to deploy the enhanced-radiation weapon (neutron bomb) needed by West Germany to destroy Soviet armor columns without destroying the nearby, closely spaced German villages. Continuing advocacy efforts by ex-Secretary of Defense Robert McNamara to decouple NATO's nuclear deter-

rence from Soviet conventional aggression via a policy of "no first use" created more anti-US controversy.

Charles de Gaulle withdrew French forces from NATO in 1966, choosing to reserve for France the advantage of having and using an independent nuclear force free from the decision-making structure of NATO. The *force de frappe* continues to deter Soviet aggression, but doctrine for its use continues to muddle NATO nuclear war planning by its very presence. The other European nuclear force is that of the United Kingdom, whose close cooperation with the rest of NATO and whose commitment to deterrence remain a hallmark of flexible response.

Across the intra-German border lie the forces of the Soviet Union. Despite a declaratory policy of no first use of nuclear weapons, the USSR built up its nuclear arsenal markedly in the 1960s and 1970s. In the 1980s, nuclear doctrine seems focused on mobility, concealment, and survival through hardening. The deployment in Eastern Europe of several regiments of SS-20 strategic missiles by the early 1980s, the invasion of Afghanistan, and the continuing support for Marxist regimes worldwide led to efforts by the US to deploy new Pershing II and ground-launched cruise missiles in Europe. Soviet conventional forces loom ominously as well. The USSR and its Warsaw Pact allies possess a considerable advantage over NATO conventional forces, most notably in tactical air forces, troops, armor, artillery, and chemical weapons. Thus, a NATO strategy to hold it all at bay is paramount.

Although this book was written before the recent Intermediate-range Nuclear Forces (INF) treaty was executed, many of Amme's arguments persist as valid. He feels that the US and NATO are able to take action to stabilize the alliance and keep the nuclear threshold clear without any agreements with the Soviets. The point is that in order to keep the use of nuclear weapons at the tactical level, the allies must comprehend the nature of nuclear warfare and its consequences fully so that discrimination and control prevail.

To do so requires a clear understanding of NATO and Soviet aims and doctrines coupled with an appreciation for the consequences of various kinds of nuclear weapons. Amme feels that NATO can survive a sudden Soviet attack and survive second-echelon operational maneuver groups with its doctrine of follow-on forces attack and appropriate use of low-level nuclear weapons. Only in later stages of combat should larger, air-delivered systems be used. He laments the fact that current doctrine does not make this distinction clear enough and that doctrine on paper and doctrine in the field are two entirely different matters.

Amme concludes that NATO's nuclear doctrine should be one of constraint but with a lower threshold for battlefield nuclear weapons. This would necessarily be coupled with a force structure clearly defensive in nature and thus be less provocative. In the current climate of openness, this seems to invite restraint and dialogue, but in other times it may well invite lax attitudes within the alliance and aggressive attitudes without.

While no longer particularly current in light of the recent INF treaty, this book presents a well-reasoned approach to flexible response and arms control. Portions of it serve as excellent roundups of current US-USSR treaties, historical confrontations between the two, the doctrine of flexible response and its history, and the battlefield doctrines of NATO and the USSR. It even provides a concise definition of the term *doctrine*: "codified sense held in common." Overall, *NATO Strategy and Nuclear Defense* is a well-done analysis of one of the most pressing yet poorly understood aspects of national strategy.

Lt Col James H. Smith, USAF
Maxwell AFB, Alabama

Rethinking Nuclear Strategy by Stephen J. Cimbala. Wilmington, Delaware 19805: Scholarly Resources, 1988, 278 pages, $40.00.

In these days when the Strategic Defense Initiative (SDI) and conventional capability seem to monopolize the printed page, it is good to see a book that examines nuclear strategy. But in examining this topic, we must also consider its basis—deterrence—lest we forget that all national policy originates there. Nuclear deterrence must be our first concern although many people seem to have forgotten that point.

Cimbala's book examines our nuclear strategy from the time the US had a nuclear monopoly up through the present era of SDI. One must keep in mind that, despite all the changes in nuclear strategy, the idea of deterrence remained dominant. However, we have gone be-

yond this idea and have dabbled with a nuclear strategy that allows us to fight and win should deterrence fail. In fact, how to fight and win sometimes appears to overshadow deterrence; thus, some authorities place great emphasis on conventional capabilities at the expense of nuclear force.

Cimbala explores five alternative strategies: general nuclear response, nuclear diplomacy, counterforce, defense, and extended nuclear war. Discussed in detail and clearly explained, all of these options are related to the basic deterrent functions of denial, retaliation, and control. Considering these strategic possibilities is a sobering experience, but one must keep in mind that the discussion is theoretical rather than historical.

This is a thought-provoking book and good reading for people interested in nuclear strategy. There is much to be learned and studied here, for, despite the current easing of tensions between the US and the Soviet Union, we should not ignore nuclear strategy.

John T. Bohn
Offutt AFB, Nebraska

Americans at War, 1975–1986: An Era of Violent Peace by Daniel Bolger. Novato, California 94949: Presidio Press, 1988, 466 pages, $24.95.

In *Americans at War*, US Army major and West Point history professor Daniel Bolger charts the seven major US military "expeditions" since America's darkest hour—the fall of Saigon and the inglorious abandonment of Vietnam and the Vietnamese. Thus, the book is about military responses to episodes as varied as piracy (of the SS *Mayaguez*), hostages and humiliation (in Iran), terrorism (the Lebanon truck bombing), and the strange mix of lunacy, Marxism-Leninism, martial law, and murder which led to intervention in Grenada, America's largest military operation since Vietnam. The 11-year toll was 337 Americans killed and 400 wounded in five successes (the *Mayaguez*, air operations over the Gulf of Sidra, Grenada, interception of the *Achille Lauro* hijackers, and the bombing of Tripoli, Libya) and two failures (Operation Eagle Claw—the tragically unsuccessful attempt to rescue hostages in Iran—and the truck bombing of the US Marine compound in Beirut, Lebanon).

Major Bolger thoroughly examines the seven operations, devoting a chapter to each one, and includes comprehensive and largely insightful postmortems. Further, each chapter contains a detailed order of battle, an assessment of issues and stakes, and a summary of the times and critical events. The chapter on Operation Eagle Claw, which Bolger considers "probably the most daunting [rescue] ever attempted," even boasts a fictional account of what might have happened had the mission not failed at Desert One. Though speculative, it does heighten the drama.

Americans at War makes a strong case for readiness, good intelligence, and a variety of conventional—and unconventional—ground, air, and sea capabilities. Bolger is an unabashed, gung ho champion of the American soldier, sailor, airman, and marine. He prefers that politicians decide a course of action then get out of the way. And he prefers that critics be longer on experience and qualifications than most of the academic and media faultfinders who so quickly and extravagantly pass highly questionable judgments.

Bolger is a better historian than political analyst. He can scarcely disguise his contempt for President Jimmy Carter, and his complaints and conclusions concerning Carter are too superficial and smug to be taken earnestly. He also summarily dismisses former Secretary of Defense Robert McNamara for "typically misbegotten" programs, leaving the reader to conclude that the nation's most controversial defense secretary accomplished little (which, if true, could hardly make him so controversial).

Unfortunately, *Americans at War* is wordy and amateurish in style. Certainly, its vignettes are frequently fascinating: the signal for the American pullout from Saigon was Bing Crosby's "I'm Dreaming of a White Christmas"; the F-111 that destroyed a Khmer Rouge patrol boat during the *Mayaguez* incident did so without even one direct hit but with the concussion from eight 2,000-pound bombs; and a certain US Marine Corps major named Oliver North appears throughout. But its clichés, jargon, and euphemisms read like a manuscript in first draft: "high-altitude platform," "punished the Khmers," "choppers," "bottom line," "blew away," "guts and the US flag," "brewed up," and "armed to the teeth." These expressions

simply do not ring true, sounding more like macho night at the club.

Still, Bolger's work provides considerable information and analysis about a wide array of military operations since the Vietnam War. Well structured and easy to read, *Americans at War* is a sobering reminder that peace may well have a violent side. It also reminds us that even the world's foremost military power has limits. But its best reminder is that even though high technology can work wonders, the human factor remains the ultimate determinant of victory or defeat.

Lt Col Wayne A. Silkett, USA
Carlisle Barracks, Pennsylvania

The Presidency and the Management of National Security by Carnes Lord. New York 10022: Free Press, 1988, 207 pages, $22.50.

Our national security system suffers from bureaucratic infighting, too much channelization, and a lack of strategic thinking by both our military and civilian leadership. Carnes Lord, a political scientist and former National Security Council (NSC) staffer during the Reagan administration, believes that national security disasters such as the Iran/Contra scandal are inevitable due to systemic flaws within the executive branch. He makes three proposals: rethink how the president tasks the NSC, define a broader role for the national security advisor, and offer solid advice to the military on how it can improve our national security system.

His criticisms of State Department bureaucrats could also be made of the Air Force's officer corps. Self-preservation is their highest priority, which leads to micromanagement and resistance to change. Furthermore, overspecialization tends to eradicate the generalists who, ironically, are the type of people who are needed at the top. Finally, short-duty tours eliminate the cohesiveness or consistency needed by subordinate personnel.

The national security process is channelized because we have not realized that foreign affairs, defense, and intelligence are interrelated. This compartmentalization is the "political-military fault line," but the problem can be solved if we develop a "single framework of analysis." A recent national security failure caused by compartmentalization was the Reykjavik (Iceland) summit in 1986 where President Ronald Reagan proposed what eventually became the Intermediate-range Nuclear Forces (INF) treaty. That proposal conflicted with current North Atlantic Treaty Organization (NATO) strategy and was not reviewed by senior defense planners or the Joint Chiefs of Staff.

Also lost is strategic thinking. The entire national security system is "astrategic" because our government does not have a "grand strategy," as defined by B. H. Liddell Hart.

Solving national security problems starts with rethinking and strengthening the NSC. Strategic planning should be its primary role, along with having the responsibility of overseeing the operational development of national strategies. The NSC must be involved in all major national security communications so that it can integrate military strategy and strategic intelligence with the diplomatic aspects of national strategy.

The assistant to the president for national security affairs (national security advisor) must be an expert in strategic thinking and have a strong academic base. Unfortunately, people with these qualifications are usually found outside the government. Lord claims that government executives, like military personnel, do not have the necessary academic background for their jobs.

Lord is appropriately critical of the military officer corps for being ignorant of the political side of national security policy. He says that our professional military schools have failed in this area and that teaching national security policy should be the war colleges' primary task.

The author brought out a good point concerning why the vice president is usually a nonplayer in national security. If a matter is important enough that it needs consideration by the executive branch, then more than likely it is so important that it demands attention from the president.

Although this text contains important material as well as timely recommendations, it need not be a priority on the Air Force officer's reading list. What we should learn from the book is that we need to know more about the political side of national security and that other government agencies are bogged down by bureaucratic infighting, as is the military.

Capt Thomas L. Driehorst, USAF
Nellis AFB, Nevada

1914 by Lyn Macdonald. New York 10022: Atheneum, 1988. 426 pages, $24.95.

A small British army, "disciplined by hard training on the frontiers of an Empire," faced the German juggernaut in the opening days of World War I. This small band of professionals fought skillfully against overwhelming odds, often outnumbered 10 to one. However, the dawn of 1915 saw the end of Britain's Old Army, decimated by a 90-percent casualty rate.

Macdonald's *1914*, similar to her much acclaimed *Somme*, is must reading for everyone in the US military. The parallels between Britain's Old Army and the American armed forces of today are uncanny. Although history may not repeat itself, it is a good forecaster for the future. Thus, *1914* provides us with valuable insights into the behavior of small, well-trained, professional armies.

The book begins with the withdrawal of troops that were garrisoned around the world to protect the holdings of the British Empire. These veteran soldiers were placed under a single command and sent across the English Channel to help their French allies defeat the invading Germans. The Old Guard, as they were called, was the only fighting force that the empire could muster in so short a time. It was the backbone of the untried, newly constituted British Expeditionary Force and fought battles in Belgium at Mons and Ypres and in France at Le Cateau, the Marne, and the Aisne during the first year of the war.

The author uses eyewitness accounts, letters, diaries, and official papers and reports to create a historically accurate picture of the first year of World War I. Hers is not a drum-and-bugle type of book. Rather, it describes the fierce battles that took place during that first year of the Great War, capturing the atmosphere of blood, sweat, and tears mixed up with deadly clouds of poison gas. But Macdonald does not ignore the other aspects of the war, such as the intense brotherhood that develops among comrades under fire.

Macdonald uses personal accounts to bring to life—through narrative and dialogue—the day-to-day, life-and-death struggles of war. One of the stories that makes the book come alive describes a group of British soldiers bathing in a cove near the sea. A small detachment of rather elderly French soldiers saw the naked men swimming toward their sea-watch position and started firing—the aged French guards thought the swimmers were Germans trying an amphibious invasion without a ship!

Lyn Macdonald's *1914* is a compelling blend of humor, action, and suspense that provides the reader with an insight into "the war to end all wars." It describes fully the turmoil that rocked the empire as Great Britain mobilized and shows in stark detail that wars, especially World War I, are fought with grit, not grandstanding. The book is superbly written and would enthrall anyone with an interest in the First World War. Finally, Macdonald's theme still applies to armed forces throughout the world: the men of the Old Guard did not fight because it was their job but because it was their duty.

2d Lt Paul J. Putnam, USAF
USAF Academy, Colorado

Bursting the Bocage: American Combined Arms Operations in France, 6 June–31 July 1944 by Capt Michael D. Doubler. Fort Leavenworth, Kansas 66027: Combat Studies Institute, 1988, 75 pages.

This is a concise, detailed history of the US Army's fighting through the hedgerow country of France from D day through the end of July 1944. Touching on air power only briefly, Captain Doubler prefers to concentrate on the small-unit tactics of combined arms operations that conquered the hedgerow country, field by field. The author begins by describing the 1944 organizational doctrine of the infantry divisions and the independent, general headquarters tank battalions that provided armor support to the infantry. He then explains the combat experiences and subsequently developed strategies which led planners to prepare for D day without giving thought to the tough fighting ahead in the hedgerows (even though this area had been studied prior to the invasion). This bloody fighting against the German troops is vividly described, as are the ingenious field improvisations of equipment and tactics that eventually proved quite successful. Illustrations depict both the Germans' strategy in their use of terrain and firepower and the Americans' tactics for countering this strategy. The slug-it-out fighting of units such as the 29th and 83d Infantry Divisions and the 3d Armored Division, though less glamorous than Gen George S. Pat-

ton's Third Army, typified the tough combat in the *bocage:*

> The attacking element consisted of an infantry squad, an engineer team, and a tank section. The attack opened when the lead Sherman, positioned along a hedgerow with the infantry and the engineers, opened fire with its main gun against the German heavy machine-gun positions in the corners of the opposite hedgerow. Simultaneously, the infantry fired from their positions with their own small arms. In addition, supporting mortars lobbed rounds on the first defensive position, while artillery shelled German defensive positions in depth. (p. 47)

The author makes several observations about the campaign, one being the US Army's ability to adapt quickly to a combat environment not covered by current doctrine. He credits success in the *bocage* to the inventiveness of the officers and enlisted men on the line. One such man was Sgt Curtis D. Culin of the 102d Cavalry Reconnaissance Regiment, the inventor of the now-famous Culin hedgerow device. Unfortunately, Captain Doubler fails to note that Sergeant Culin was awarded the Legion of Merit for the invention. Granted, this is a small omission, but the award recognized the ability of the frontline fighting man to resolve problems at the lowest level—a capability that all leaders should keep in mind. Apart from such minor flaws, this book is a well-researched, incisive account of the Allied victory in the *bocage.*

SMSgt William D. Buhrman, USAF
George AFB, California

I Can Write Better Than That!

OK, then do it! *Airpower Journal* is always looking for good articles written by our readers. If you've got something to say, send it to us. We'll be happy to consider it for publication.

The *Airpower Journal* focuses on the operational level of war, that broad area between grand strategy and tactics. We are interested in articles that will stimulate thought on how warfare is conducted. This includes not only the actual conduct of war at the operational level, but also the impact of leadership, training, and support functions on operations.

We need two typed, double-spaced draft copies of your work. We encourage you to supply graphics and photos to support your article, but don't let the lack of those keep you from writing! We are looking for articles from 2,500 to 5,000 words in length—about 15 to 25 pages.

As the professional journal of the Air Force, we strive to expand the horizons and professional knowledge of Air Force personnel. To do this, we seek and encourage challenging articles. We look forward to your submissions. Send them to the Editor, *Airpower Journal*, Walker Hall, Maxwell AFB AL 36112-5532.

Writing for the *Airpower Journal*

Over the years and throughout the various units to which the editors of *Airpower Journal* have been assigned, we have known many people who debated whether or not to write an article for the Air Force's professional journal. Most decided not to do so for a variety of reasons.

I'll get hammered! This was the most often-heard reason. People perceived that speaking out was something Air Force members shouldn't do and that those who did suffered for it. They felt that if they wrote, even for an approved Air Force publication, their commanders, their major command, or the Air Force as a whole would take actions to show disapproval. As you may have read in our premier issue (Summer 1987), Gen Larry D. Welch, Air Force Chief of Staff, addressed this issue in a most positive light. The Air Force recognizes the need for its members to speak up and write about the profession of warfare, even if that means writing that the US Air Force could be doing it better. We can't guarantee you that someone won't oppose your views, but it is not Air Force policy to penalize its people for writing in a publication. So go ahead, share your thoughts with your fellow airmen.

"They" don't publish "regular people" like me. Just try us! With the *Journal* focusing on the operational level of war, we hope to see more and more articles coming from the people who know what they're talking about—people like YOU. The officer corps, enlisted personnel, and the Air Force civilians are the hands-on experts. You are the people who deal with war and the preparation for war. You are the people who have the ideas we need to hear. We can't guarantee we'll print what you write, but we'll help you in every way we can to achieve that goal.

They only want to hear about ops. Not so. We interpret the term "operational level of war" very broadly. It is how we fight. And that depends on how we train, how we operate our logistics systems, how we manage and lead our people—in short, all the day-to-day functions that create a capability to effectively apply combat power.

Convinced? We hope so. If you are, the next step is to write an article that has a good chance of being published. First, write on a topic you are familiar with, either because you have worked in that area or because you have a special interest in the area. Don't try to guess what topic the *Airpower Journal* "needs" an article on. We don't work that way. Likewise, don't stop just because you saw an article on your subject in a recent issue. We review each article on its own merit, and yours may offer a new perspective.

Second, don't try to solve the problems of the world in one article. We look for articles of between 2,500 to 5,000 words (approximately 15 to 25 typewritten double-spaced pages). So concentrate on a specific area. A topic such as "Defending Against the Soviets" is too broad. "Effective Use of Air Base Ground Defense Teams" is more appropriate.

Next, be straightforward in your writing. Don't try to make it look more impressive by using multisyllable words where they're not needed, but don't shy away from sending your readers to the dictionary when necessary. Remember that your readers are probably not as expert on the subject of your article as you. Write to your audience. Organize your thoughts in a logical way and stick to the subject. Cite sources and data where appropriate (endnotes are in addition to the 15 to 25 pages). Papers containing unsupported assertions are not the type that get published.

Finally, if possible, send photos, maps, and other appropriate illustrations that support your article. If you don't have them, *don't let that deter you from writing.* You may have supporting illustrations that are more appropriate than those available to the editors, but if not, press ahead.

Once you've written your article, send it to the Editor, *Airpower Journal*, Walker Hall, Maxwell AFB AL 36112-5532. We'll assess it for publication. If we like it but think it needs some rewriting, we'll work with you to make a stronger article. If we decide not to publish it, we'll let you know why rather than simply sending you a short "thanks-but-no-thanks" letter. We will assist you as best we can to make for the best professional journal possible. That's what we're here for, but it's your journal. Now get out there and write. □

notams

Notices of upcoming conferences, seminars, and other professional events of a noncommercial nature should be sent to the Editor, Airpower Journal, Walker Hall, Bldg 1400, Maxwell AFB AL 36112-5532. We reserve the right to edit material for length and editorial content.

Air University Review Index

The Air University Press is in the process of publishing a complete index of the *Air University Review* (1947–1987). This reference work will contain an author index, a title index, and a cross-referenced subject index. Any Air Force or other government organization, college or university library, or similar organization with a need for this index can be placed on distribution. Requests for distribution and other inquiries should be addressed to Maj M. A. Kirtland, AUCADRE/RI, Walker Hall, Bldg 1400, Maxwell AFB AL 36112-5532. Major Kirtland can also be contacted at AUTOVON 875-6629 or (205) 293-6629.

USAFA Military History Symposium

The US Air Force Academy's Department of History will host the Fourteenth Military History Symposium at the academy from 17–19 October 1990. This year's topic is "Vietnam, 1964–1973: An American Dilemma." Sessions will be conducted on Vietnam War scholarship, the war during the Johnson and Nixon eras, and Vietnamese perspectives of the war. The symposium also features the Harmon Memorial Lecture. For more information, contact Capt Scott Elder, Department of History, US Air Force Academy CO 80840-5701 or call AUTOVON 259-3232 or (719) 472-3232.

New Tanker/Transport Trainer

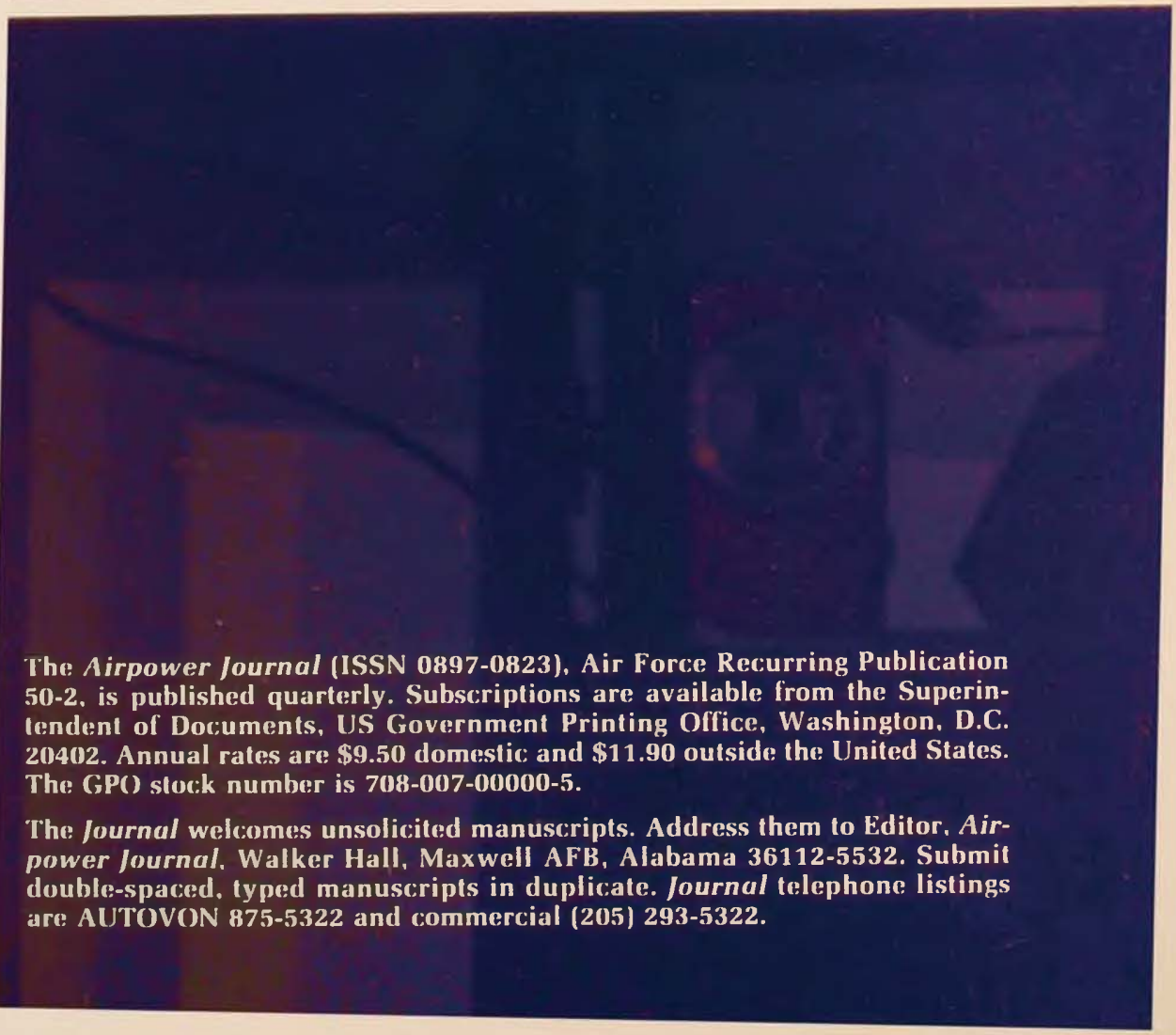
The Air Force has named its newest tanker/transport training aircraft the Jayhawk. Designated the T-1A, the Jayhawk will be a twin-engine modification of the Beech 400A commercial business jet. It will be used to train students in the advanced portion of the tanker/transport track of specialized undergraduate pilot training (SUPT). With seating in the flight-deck area for the instructor and two students, the new trainer will introduce trainees to the skills needed to function as flight-deck crew members. This will be Air Training Command's first new trainer since the 1960s. Plans call for production of 211 aircraft by 1997.

Historical Research Center Grants

The United States Air Force Historical Research Center (USAFHRC) has announced the availability of research grants to encourage scholars to study the history of air power through the use of the center's US Air Force historical document collection, located at Maxwell AFB, Alabama. Grants up to $2,500 are available for qualified applicants who will visit the center for research during fiscal year 1991. Applicants must have a graduate degree in history or related fields, or equivalent scholarly accomplishments. Their specialty should be in aeronautics, astronautics, or other military-related areas. A wide variety of military-related topics may be covered in the proposed research. Preference will be given to those proposals that involve the use of primary sources held at the center. Applicants may request an application from the commander, USAF Historical Research Center, Maxwell AFB AL 36112-6678. The deadline for submission of applications is 31 October 1990.

contributors

Donald D. Chipman (BA, California State University, Chico; MS and PhD, Florida State University) is the educational advisor to the commandant, Squadron Officer School, Maxwell AFB, Alabama, and a retired commander in the US Naval Reserve. Dr Chipman is coauthor of two books on the philosophy of education and has published articles in several academic and military journals, including *Air University Review*.



The *Airpower Journal* (ISSN 0897-0823), Air Force Recurring Publication 50-2, is published quarterly. Subscriptions are available from the Superintendent of Documents, US Government Printing Office, Washington, D.C. 20402. Annual rates are $9.50 domestic and $11.90 outside the United States. The GPO stock number is 708-007-00000-5.

The *Journal* welcomes unsolicited manuscripts. Address them to Editor, *Airpower Journal*, Walker Hall, Maxwell AFB, Alabama 36112-5532. Submit double-spaced, typed manuscripts in duplicate. *Journal* telephone listings are AUTOVON 875-5322 and commercial (205) 293-5322.

Features for the Fall

- Combat Rescue
- Doctrinal Origins of "Aerospace"

AU PRESS