AIR UNIVERSITY REVIEW

Mars

ALTERNATIVES AND OPTIMUM STRATEGY . . . THE JCS, PART II . . .
NATO DEFENSE COLLEGE . . . SPACE ACTIVITIES IN ARGENTINA

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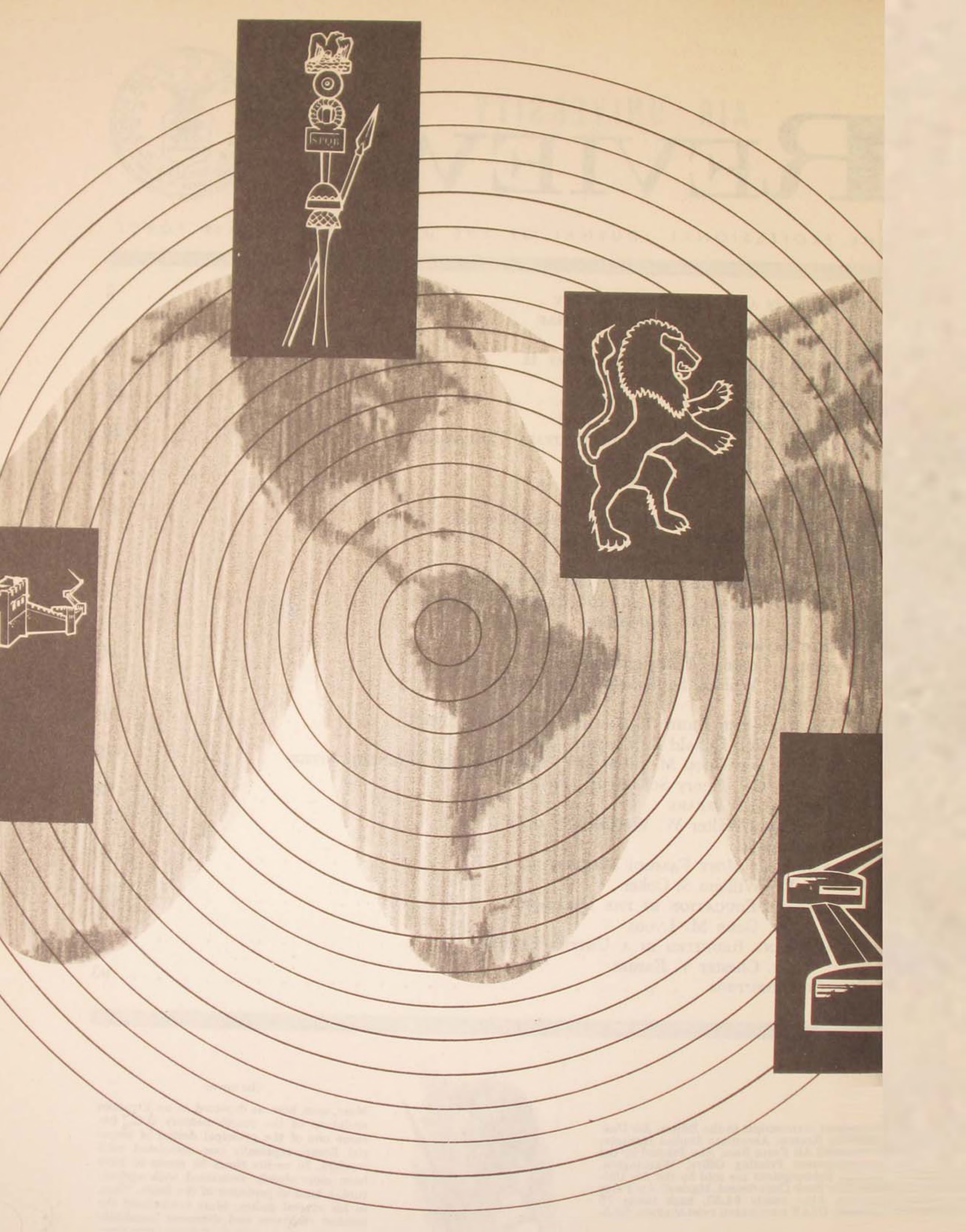
the cover

Mars, seen here as depicted in an Etruscan sculpture of the fourth century B.C., became one of the principal deities of imperial Rome, especially one associated with warfare. In earlier times he seems to have been more closely associated with agriculture, a kind of protector of the fields. Thus, in his several guises, Mars symbolized the combat readiness and deterrent capability requisite to a strong defense structure.



ALTERNATIVES AND OPTIMUM STRATEGY

LIEUTENANT GENERAL JOHN W. CARPENTER III

OVER the centuries, powerful nations of the world have sought continually an optimum strategy which approximates, as nearly as possible, an unqualified capability of deterring all foes at all levels of conflict. Optimum forces required by a world power at any given point in time, then, are simply those which will insure that happy state of *unqualified deterrence*. With all foes deterred at all levels, political, economic, and territorial goals may be pursued with a fair degree of assurance of success.

Historically, the ability of world leaders to deter appears to have followed a cyclical pattern. Starting at any one of a number of points in recorded history, the Great Wall of China, for example, we observe an attempt at unqualified deterrence. The Roman Empire was established and its pre-eminence maintained by a system that produced deterrence in the form of the Roman legions and the tactics employed by those legions.

Downstream, historically, we find that period in British history known as *Pax Britannica*, when Britain ruled the seas, and the very presence of British men-of-war deterred nations from upsetting world stability. During that time, in 1823, our own President Monroe issued a manifesto which bears his name. The objective of the Monroe Doctrine was deterrence—to deter Old World nations from extending their influence and control into the Western Hemisphere. The nations of Europe may or may not have believed that the United States, alone, could deter them from adventures in the New World. But, for whatever reasons, they were deterred; and effectiveness is the true measure of the success of any strategy.

In modern times between the two World Wars, the Maginot Line provides another pertinent element for this discussion. The objective of the Maginot Line was, of course, to deter the Germans from attack on France. For

a time, the Line achieved its purpose—but only until Hitler judged that he had a means of overcoming the deterrent. Here we have a classic modern example of the cyclic and the perishable nature of "unqualified deterrence."

At the end of World War II and after Korea, the United States adopted a policy of strategic deterrence—a declaratory policy of massive retaliation. As long as we possessed an atomic monopoly, this strategy did provide a deterrent; and for a good number of years, it was a reasonable approach to the optimum unqualified deterrent at all levels. The "unqualified" and the "at all levels" portions began to deteriorate as soon as someone else (the Soviet Union) developed a credible counter to the U.S. atomic monopoly. During the last ten or twelve years, our massive retaliation policy has further eroded or, perhaps more correctly, has evolved into what is today discussed as "flexible response."

Essentially, the point we draw from history is that throughout the years nations have fought to establish the optimum strategy of unqualified deterrence at all levels, and from time to time they have succeeded momentarily. Then, as the pendulum swung in the opposite direction, the ability to deter at all levels was lost and the process began again. The Great Wall of China, the Roman Empire, *Pax Britannica*, the Maginot Line, and our own declaratory policy of massive retaliation in the 1950's—all provided, for a time, a posture which supported the optimum strategy of unqualified deterrence. The forces available to the great power in each instance were sufficient to support the unqualified deterrent posture of the day, and, therefore, they were optimum for that world situation. But the myth of "stable deterrence" was destroyed each time as the cycle repeated itself.

The "flexible response" idea, as enunciated in the 1960's, provides ample evidence that we are descending from one of those peaks along the abscissa of time and that our current posture falls short of that necessary to support the optimum strategy in today's world.

Usually coincident with those points in history where one nation or another has been able to maintain a posture in support of unqualified deterrence, we have observed recurring attempts to achieve world domination. Inevitably the human race again produces a personality who judges that his position of unqualified deterrence provides sufficient superiority over his foes to enable him to subjugate all who oppose him. Alexander the Great, the emperors of Rome, Napoleon, and Hitler are but a few who figure in this category, and history has dealt with each in turn. Some were capable strategists and perhaps even brilliant tacticians, while others had doubtful capabilities in either field but were possessed of phenomenal motivation and monumental self-confidence. Napoleon's efforts, of course, come immediately to mind. A master tactician, but no global strategist, it is not clear that Napoleon ever really deterred anyone. He had everyone of his day frightened and for years proceeded with brilliance to defeat all opposing military forces each time he could fix them. The fact that his overall strategy was unsound and his judgment clouded appears amply substantiated by his disastrous attempt to conquer Russia.

Although not in the same category as the strategies of these power opportunists, General Nathan Bedford Forrest's oversimplified military formula, "Git thar fustest with the mostest," is sometimes cited as an optimum strategy. Here, again, is the tactician speaking, and his precept represents a *means* toward the *end* of achieving the optimum strategy. On the other hand, if unqualified deterrence is in fact achieved, it may never be necessary to get there "fustest with the mostest." Certainly, when an opponent's state of mind is such that he *believes* that superior force can and will be brought to bear against him, then that state of unqualified deterrence sought by powerful nations throughout history has been achieved.

Since our nation does not possess an unqualified deterrent posture at this point in time, current decisions on military force structure and composition assume additional significance. Limited resources must be applied judiciously to insure continuing free world strategic superiority and to provide deterrence at the levels of conflict most likely to disrupt or destroy those elements of our society and way of life that we seek to preserve. Since we

cannot deter unequivocally at all levels, we must insure that our opponents limit their attack upon us to levels of conflict which will not destroy the nucleus of our national society.

Over the past few years a significant revolution in defense management and force structure decision-making has occurred in the United States. One of the innovations contributing heavily to this revolution has been a process now labeled "systems analysis."

Systems analysis is a management tool for decision-makers. Its purpose has been well stated by Paul A. Hower, Chief of Operations Analysis, Hq USAF:

> . . . to structure and define the decision problem and to identify and describe an appropriate set of alternatives for judgmental choice; it is to collect and collate facts and information relevant to full understanding of the alternatives and for each alternative to describe the interrelations among these facts, as well as their relationship to policy issues, objectives, and value judgments. It is to distinguish explicitly between fact and matters involving judgment. It is to examine the implications of uncertainty and risk associated with each alternative and to evaluate the impact of each alternative on options for future decision on revised value judgments, on evolving changes in policy and national objectives, and on follow-on courses of action.[1]

Systems analysis can be many things to people engaged in the decision-making process. But one thing it is not: by definition, it is not a means of making the decision, of exercising judgment, and making the final choice of the options or alternatives considered. Dr. Alain Enthoven said in December 1963, in an address before the Metropolitan Washington Board of Trade Science Bureau, "Analysis cannot supplant decision-making. Defense policy decisions cannot be calculated." A "before and after" look at the general method of determining strategy and force structure may help to identify the true function of systems analysis in the decision-making process today.

The system in effect prior to 1961 for determining our military force structure differed from the one prevailing today. Before 1961, the National Security Council each year approved a document known as the Basic National Security Policy, popularly referred to simply as the BNSP. This document was intended to provide the strategic guidance within which forces and contingency plans were to be developed. The Joint Chiefs of Staff, assisted by the Joint Staff and the military services, then derived the forces required to support the BNSP in a document known as the Joint Strategic Objectives Plan (JSOP). The JSOP set forth the required forces over a period of four or five years and indicated the contingencies for which these forces were to be used. It was then up to the Secretary of Defense and his staff, working with the financial branches of the military departments, to derive from these forces the annual defense budget required to support them.[2]

The method for bringing the defense budget into line with the fiscal policy of the administration, except for the Korean War period, was to divide a total defense budget into "bogeys" among the three military departments, leaving to each department the allocation of funds within its ceiling among its own functions, units, and activities. Under this system, there was a separation between budgeting and military planning: one, chiefly military, done by the Joint Chiefs of Staff; the other, done primarily by civilians in the Office of the Secretary of Defense and the Bureau of the Budget. Forces were described in military terms—divisions, air wings, squadrons, etc. Budgets were subdivided into so-called "functional" terms: procurement, personnel, operations and maintenance, etc. Force requirements were projected for four or five years into the future, while budgets were prepared for a year at a time.

This separation permitted the military planner and the budgeteer to act with comparative independence. The budgets bore no explicit relationship to force levels or readiness. As a consequence, budgets could be set arbitrarily, without specific reference to military requirements, and designed to suit the fiscal preferences of the government. This is not to say there was no relationship between budgets and forces. Actually, there was, but it was not a particularly close one. The tendency then

was toward establishing a project one year, with the hope that, somehow or other, funds would be provided for continuation of the project in the years to follow.

In 1961, when Mr. McNamara became Secretary of Defense, this method of doing business began to undergo some significant changes. The principal ones have been these:

(a) The annual statement of Basic National Security Policy has been discontinued. No such document exists today. The Joint Strategic Objectives Plan, however, continues as a basic planning document, and it now contains, among other things, force tabs which the Joint Chiefs consider "reasonably attainable" with respect to possible budgets of the coming years.

(b) The determination of DOD force requirements and annual budgets has been integrated in the Programming System and the Five-Year Defense Program.

The organization of the Department of Defense and the military services has undergone major alterations to provide the responsive information required to feed the integrated decision-making process.

In September of 1965, the Office of the Assistant Secretary of Defense (Systems Analysis) was created for the purpose of assisting the Secretary of Defense in his decisions about force structure. That office, headed by Dr. Alain Enthoven, is responsible for reviewing quantitative requirements, including forces, weapon systems, equipment, personnel, and nuclear weapons. It also assists the Secretary of Defense in the initiation, monitoring, and review of requirements studies and cost-effectiveness studies. One of Dr. Enthoven's specific responsibilities is "to encourage the use of the best analytical methods throughout the Department of Defense."[3]

Early in 1965, Air Force headquarters, responding to the increasing number and complexity of studies, established the Directorate of Studies and Analysis under the Deputy Chief of Staff, Plans and Operations. Major General Howard A. Davis was named the Director of the new staff agency, whose function it is to improve the Air Staff study capability and the quality of Air Staff studies. This directorate includes planners, operators, R&D specialists, logisticians, and both "blue suit" and civilian analysts.

The other services have responded in a similar manner, and each has its own system for providing analytical studies and data. In the Air Force, the Directorate of Studies and Analysis is responsible for formulating a designated studies program for review by the Air Force Council and recommendation to the Chief of Staff for approval. This directorate conducts, or assists in the conduct of, all Designated Studies. A Designated Study, one approved as such by the Chief of Staff, is accorded the highest priority in study effort by virtue of its importance to the Air Force, the Department of Defense, and the nation. This category of study may include projects directed by the Office of the Secretary of Defense and by the Office of the Secretary of the Air Force, as well as by the Chief of Staff or the Vice Chief of Staff.

Also in Air Force headquarters, the Office of Operations Analysis—under the Chief of Staff—has increased its study capability with the addition of civilian and military analysts. The military analysts who have been selected are those with advanced degrees in the so-called "hard sciences" such as operations research, mathematics, physics, and engineering, and who have had a solid background in planning or operations. This represents the first real integration of the military officer with the professional civilian analysts in the Operations Analysis Office of the Air Staff.

The role of the Office of Operations Analysis has changed from an independent and exclusively advisory function to one directly associated in a practical way with the substantive work of the Air Staff. The capabilities of the analysts are being integrated with the Air Staff at the action level, with the analysts sharing in the responsibility for study formulation and product.

The Air Force, the other services, and the unified and specified commands are becoming increasingly responsive to the Defense Department's method of analyzing systems—termed by some as the "rational decision-making process" and by others the "decision theory."

RESPONDING to the nation's and the Air Force's needs in officer education, Air University has expanded its curriculums appreciably. For some time, both resident and nonresident schools of the Air Force Institute of Technology have included formal study in the disciplines related directly to the systems analysis area. During the 1965–66 academic year, the greater part of the Air Command and Staff College's 254 academic hours of "Military Management" may be related to systems analysis. And, for the first time, the Air War College included a block of 48 hours of instruction designed to respond to the requirement for officers with increased understanding and appreciation of the analytical tools and techniques available to the military decision-maker.

Why this emphasis on management and systems analysis? What impact has systems analysis had on the selection of optimum strategies and forces? What relationship does systems analysis, in fact, have to military experience and judgment? Several points clearly emerge in answer to these questions:

(1) The strategic thinking of the United States has been reasonably good and successful over the past two hundred years. Each time world politics or advancing technology has challenged our country, we have scurried around and, in most instances, have come up with quite adequate and fitting responses. Occasionally we have produced a breakthrough, such as the "ironclad" battleship, the atomic bomb, and the proximity fuze.

(2) Since the introduction of systems analysis into defense management in 1961, there is no indication of a dramatic change in this nation's strategic thinking. We are following the same "strategy curve" that we would have in any event, assuming the type of intelligent and rational guidance which the American public should be able to expect.

(3) The normal, though exponential, advance of progress and technology, with instant worldwide news, rapid communications, and almost unlimited possibility of improving our capabilities, has placed a strain on our limited national resources never before experienced in our history as a nation. The struggle for the defense dollar within a fixed budget has intensified, and with it has come a realization by managers at all levels that we must know how much the items we are buying this year are going to cost us next year, the year following, and the year after that.

(4) About the time the Kennedy Administration took office, many of our forward thinkers began to realize that the degree of unqualified deterrence enjoyed by the United States under our policy of massive retaliation was being eroded. The finite defense budget confronting our planners might not continue to provide the forces necessary to permit us, as a nation, to maintain this optimum strategy, and the credibility of our deterrent might be questioned at any time. Shortly after the accession of the Kennedy Administration, the complaint was voiced that the options provided by the force structure of our armed services offerred only a choice between humiliation and all-out war.

In this environment, the Secretary of Defense served notice that no service "bogey" within the defense budget would be sacred. A new and searching examination of all military requirements would be made, and the budget and the force structure would be integrated to insure the best defense for the dollars available.

The Defense Department's blueprint for analysis and decision has evolved from that beginning to the present time, when we find that systems analysis is the major tool for the DOD decision-maker.

In addition to the emergence of a major new management tool for decision-makers, the past five years have seen a decided change in the level at which the decision is made. We in the military had been accustomed, in large measure, to determining, within the service "bogey" of defense dollars, the forces which the service determined it needed most. Over the years we had developed a system and procedure designed to accomplish the required force structure cycle under these ground rules. But the Military Position Paper, used for many years in estimates of the situation and force determination, was no longer responsive to the needs of the new level of decision-making, i.e., the Secretary of Defense or higher. Con-

sequently it has been replaced by the "Study for OSD." The following table, prepared in 1964 by Mr. Hower, will be helpful in understanding the newer orientation.

A great deal has been heard of the "intellectual arrogance" of some of the proponents of systems analysis. The military, I suspect, has at times been just as guilty of arrogance in operational matters. Until fairly recently, the Office of the Secretary of Defense adhered firmly to decisions based primarily on the results of systems analysis, whereas the military continued to press for courses of action based primarily upon operational experience. In other words, each attempted to seek a solution with the tool he understood best. Actually, the objective solution requires the best of systems analysis, tempered by the best available operational experience.

How, then, can the civilian decision-maker achieve a proper blending of military experience along with his own understanding of "rational" decision-making techniques?

The first requirement in the process of influencing someone to accept advice is, of course, to submit it in a language he knows and understands. If the decision-maker is to be given the benefit of military and operational experience, it would appear desirable to adapt this experience to the "decision theory" method of presentation.

Another important consideration must be stressed here. Many in the military probably have failed to recognize that systems analysis based upon faulty assumptions may well be used to guide the decision-maker unless the faults are exposed. Any analyst, whether he be military or civilian, must be expected to defend his analysis vigorously and as convincingly as possible. Although the analytic system is sup-

Military Position Paper	*Study for OSD*
1. Seeks approval of a specified course of action. Recommendations are an essential part.	1. Seeks to inform with respect to the relative merits of alternatives. Recommendations (judgmental preferences) are inappropriate because common criteria of preference are not implicit.
2. Advocates a specific policy, position, or course of action. Nonpreferred alternatives have been examined and discarded by the staff.	2. Explicitly identifies and examines appropriate alternatives. None is discarded by staff. Alternatives in ends (objectives) as well as means are appropriate.
3. Oriented to decision-maker with military operational experience and extensive background information in military (Air Force) matters.	3. Oriented to decision-maker with experience in formal logic and the scientific method and with an educational background in economics, mathematics, or science.
4. Evaluates proposal, utilizing military worth and operational criteria.	4. Compares alternatives, utilizing effectiveness and economic criteria.
5. Emphasizes operational considerations of proposal and judgmental evaluation of military utility and flexibility.	5. Emphasizes logical formulation and quantitative comparisons of alternatives.
6. Sensitive to interservice considerations and Air Force interests with respect to roles, missions, and doctrine.	6. Sensitive to national policy and to balance and economy in national defense posture.

posed, implicitly, to be neutral, it is not likely that all analysts are completely free of some preconceptions. This leads us to consider the defensive aspect of systems analysis, which functions in two ways. The analyst must be able to defend his own analysis from attack and, at the same time, be able to dissect the assumptions and methods used in other analyses in order to expose weaknesses and misconceptions which might lead the decision-maker to a wrong conclusion.

IN SUMMARY, there is only one real and meaningful *optimum* strategy—that of unqualified deterrence. Unqualified deterrence is possible at any level of conflict only if available forces convince an opponent that he can be defeated if he becomes engaged at that level. More important, he must believe that the military power available for employment against him will, in fact, be used. Only then will he be deterred.

Today, the United States does not have unqualified deterrence at *all* levels, but we *are* able to deter our opponents at the upper levels of the spectrum of war. Whether an opponent will believe that we will use our general-war forces in any given situation is always open to debate.

The aim of all the argument and competition for the defense dollar is to determine how we shall use this finite resource to buy military forces. There are, of course, differing opinions as to the composition of a force structure which will allow us most nearly to achieve unqualified deterrence within the framework of the budget and within the Five-Year Defense Program for the years to come.

In my judgment, the greatest single cause-and-effect relationship of the new process of management in the Department of Defense is a shift of the level at which the decision on forces is made. The level of decision is now the Secretary of Defense, or higher, which can be compared generally with the level of service Secretary or Joint Chiefs of Staff prior to the change of Administration in 1961.

Systems analysis has emerged as the primary management tool for making qualitative and quantitative decisions on military forces, and consequently with respect to the manner in which the defense budget is divided. Systems analysis is a technique not beyond the comprehension of any intelligent and industrious military man. It is the language of our current decision-makers, and if we in the military are to influence national policy and the military force structure, we must learn the language and use it in communicating with the decision-makers.

Air University

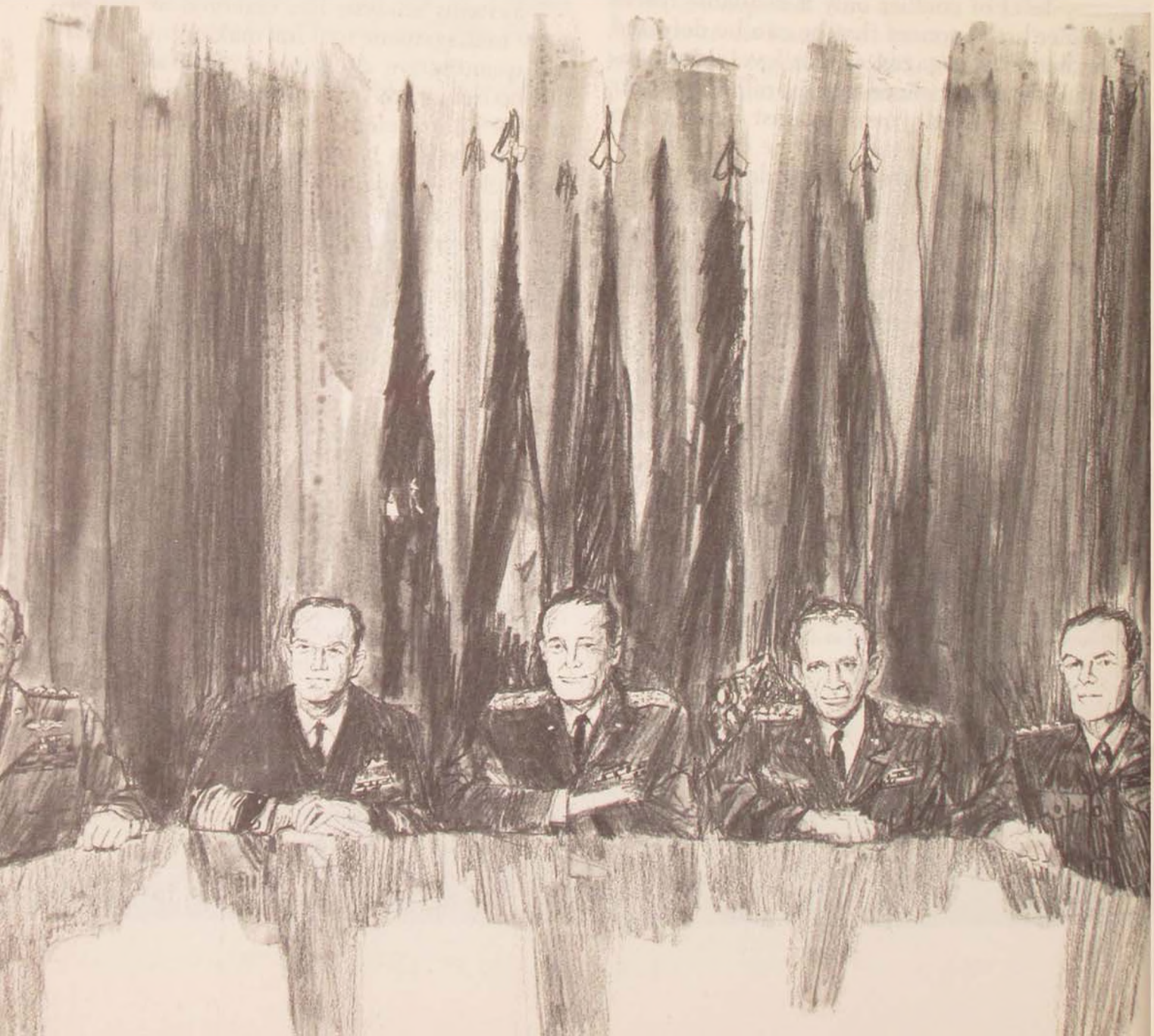
Notes

1. At a briefing for the Air Staff, 10 December 1964.
2. Much of the material contained in this paragraph and through subparagraph (b) is based on remarks by Dr. Alain C. Enthoven, then Deputy Assistant Secretary of Defense (Comptroller), at the conference on Applications of Operations Research to Military Resource Allocation and Planning, Sandefjord, Norway, 23 August 1965. The discussion of defense budgeting is based on remarks by Charles J. Hitch, then Assistant Secretary of Defense (Comptroller), at California Institute of Technology, Pasadena, California, 7 April 1964.
3. DOD Directive Number 5141.1, 17 September 1965.

THE JOINT CHIEFS OF STAFF AND DEFENSE POLICY FORMULATION

MAJOR LAWRENCE B. TATUM

Part II.
The Military Role



IF IT IS true that strategic decisions are, for various reasons, no longer the exclusive preserve of the military, is the converse also true? Has the military strategist gone the way of the dinosaur? Professor Samuel P. Huntington tells us that since 1950 all major revisions in overall strategy have been due to concepts and initiative supplied by civilians.[1] Must the military professional accept only an "operator" role in the force construct?

It would be dangerous for the military not to continue to be one of the important contributors to defense policy formulation. Separation of strategic policy-making and operations is artificial.

The Johnson Administration, like the Kennedy Administration, believes that the same people ought to be engaged in handling policy and operations problems. As McGeorge Bundy, Special Assistant to the President for National Affairs 1961–65, said:

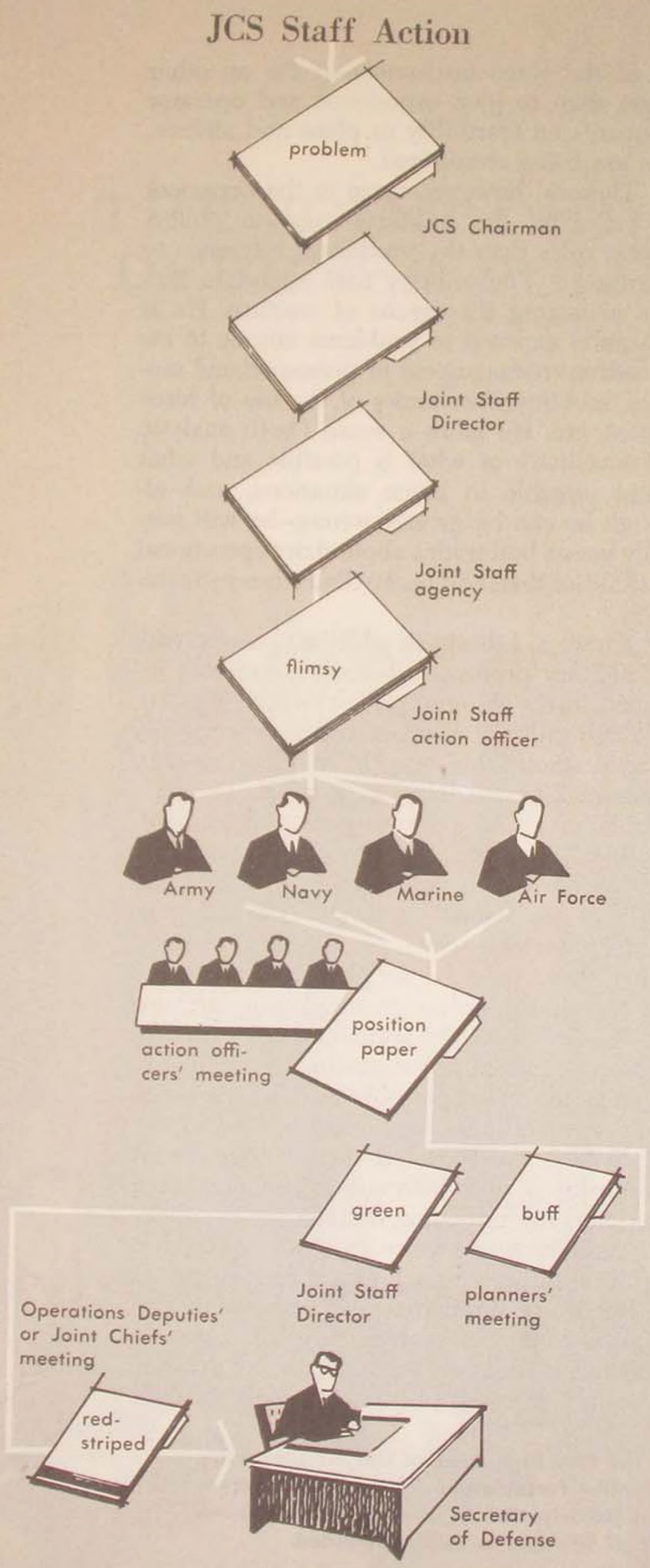
> We have deliberately rubbed out the distinction between planning and operation which governed the administrative structure of the NSC [National Security Council] staff in the last administration. This distinction, real enough at the extremes of the daily cable traffic and long-range assessment of future possibilities, breaks down in most of the business of decision and action. This is especially true at the level of Presidential action. Thus it seems to us best that the NSC staff, which is essentially a Presidential instrument, *should be composed of men who can serve equally well in the process of planning and in that of operational followup*. (Italics mine.)[2]

If the distinction between planning (i.e., strategy-making) and operations is false at the national security level, it is no less so at the defense and foreign policy levels—to whatever degree these two areas can be separated and considered apart from the integrated whole. Those who know the mechanics of applying force or the threat of force ought to be involved in the making of policy calling for the use of the force instrument—if for no other reason than to give experience and operator judgments on feasibility as plans and alternatives are being considered.

There is, however, more to the argument for including the military voice in policy-making roles than the traditional reference to experience.[3] The military man spends a lifetime managing the means of warfare. He is constantly exposed to problems unique to his profession—management of personnel and materiel, mobility, mechanics of the use of force control, etc. He gains a sense (both analytic and intuitive) of what is possible and what is not possible in given situations; and—although he can be grossly wrong—he will normally have a better idea about strict operational feasibilities than will his civilian strategy teammates.[4]

There is, I think, an additional reason why the military professional needs prominent inclusion in the defense policy-making process, although military men are themselves sharply divided about this one. If national security policy-making involves, as it must, the integration of all of a state's policy instruments (political, economic, psychological, and military), *who* is to be involved in the "integrating"? If we cannot separate political from military factors when we discuss strategy, either there must be a "philosopher-king" at the top of the policy pyramid who sifts out the "truths" from the arguments presented by various parochial advocates, or there must be a collection of responsible individuals representing operational organizations, and all trying to take an integrated view. Under the latter approach, with both military men and civilians officially providing defense policy advice, the military man's voice in strategy could be significant, not so much as a military man per se but as an intelligent and responsible contributor to the national security policy process. Inevitably, someone at the top of the decision-making process would have to make final de-

The first part of this article, which appeared in the May-June issue of the *Air University Review*, dealt with the civilian role in defense policy formulation. There Major Tatum concluded that the trend toward greater civilian participation in strategy-making is no transitory phenomenon but is a permanent fact of life that is solidly founded.



cisions; but he would not be operating under the assumption that Pentagon officials give him only military inputs, or that State Department superiors offer only political advice, or that Treasury leaders comment only on economic matters, etc.

How well has the military professional been playing his role in strategy-making? Frankly, *quite inadequately*. I have tried to demonstrate that civilians are bound to make a significant input to defense policy formulation. However, it is my principal thesis that the current voice of the officer professional is dangerously weak because the military generally has assumed, incorrectly, that its effectiveness is best ensured if its advice is unanimous. The system designed to secure the unanimity believed necessary is the Joint Chiefs of Staff planning process. And, I will argue, the JCS process produces papers of such dubious substance as almost to ensure the rejection of their policy recommendations on important strategy issues.

What are the JCS empowered to do?

> The Joint Chiefs of Staff are the principal military advisers to the President, the National Security Council, and the Secretary of Defense. They constitute the immediate military staff of the Secretary of Defense, serving in the chain of command that extends from the President to the Secretary of Defense, through the Joint Chiefs of Staff, to the commanders of unified and specified commands. The chain of command to the Chief or Director of Defense Atomic Support Agency, Defense Communications Agency, Defense Intelligence Agency also runs from the Secretary of Defense through the Joint Chiefs of Staff.[5]

Perhaps the functions of the JCS can be summarized as follows: (1) they do all strategic planning, and (2) they direct and supervise all military operations carried out by the principal combat commands (through a delegation of authority from the Secretary of Defense). In this article I am not concerned about the second of these responsibilities. I am concerned with the first function and what I believe to be the inability of the JCS to perform it. To put it bluntly: the military are at a distinct disadvantage regarding inputs to strategic

planning because JCS planning procedure practically ensures compromise at the lowest common denominator.

Under these circumstances, the JCS can make a valuable contribution only to the extent that divisions on strategic thinking are civilian versus military. But, we are told, purely civilian-military splits are a rarity.[6] Far more frequently, defense policy issues find some military men and some civilians on contending sides. When that happens, the JCS as an organized planning entity has little impact on the final decision simply because its papers normally do *not* reflect existing differences of opinion among military strategists. If divergencies are along service lines, the Chiefs may furnish important strategic advice through individual contact with the Secretary of Defense and the President. Far more likely, however, increased civilian dominance of the defense policy field is the result of a military planning system organized for compromise.

But this is strong medicine. Before the reader is likely to accept the contention that military consensus-seeking (as exemplified by present JCS planning procedure) is primarily responsible for diminution of the military's voice in strategy-making, it is necessary to indicate how the JCS as an agency tackles any problem (strategic planning or otherwise) assigned to it. The various channels and stages through which a JCS paper must proceed before it receives approval as an official military position are indicated by following the arrows in the accompanying chart.

Requests for JCS staff action may come from a variety of sources: the President, the Department of Defense (DOD), other executive departments through DOD, the JCS Chairman or the Chiefs as a body. However the request may have been received, the Chairman of the JCS (or the Chiefs as a body) indicates to the Director of the Joint Staff that a paper should be written on a particular problem. Because of the multitudinous demands made upon the JCS, suspense dates on papers are usually two weeks or less. Already a problem is encountered: the military strategist is not given sufficient time to turn out a quality paper, especially since so much of his effort must be devoted to the bureaucratic processes through which he must steer his "masterpiece."

The Director decides which Joint Staff directorate or agency (hereafter called agency) is principally concerned and assigns that agency primary responsibility for producing a fully staffed paper. The Director also assigns secondary responsibilities, if any, to other Joint Staff offices having an interest in the particular matter, including Defense Intelligence Agency (DIA), Defense Communications Agency (DCA), and Defense Atomic Support Agency (DASA). The primary agency appoints one of its officers as primary "action officer."[7] Throughout its "development" life the paper is *the* responsibility of the primary action officer. While this action officer has certain initiative options, the gantlet through which he must run his paper is highly restrictive, as will be seen.

The primary action officer's first responsibility is to hold a meeting with all the Joint Staff secondary action officers to outline workload responsibilities and to agree to a Joint Staff position. Another problem arises here: an agreed Joint Staff position may be difficult to obtain if the strategy problem is important and the action officers represent different services. A need to compromise, therefore, may arise very early in the planning process. However, the problem is seldom severe at this point, since Joint Staff officers are not normally adamantly service-oriented.[8] They know, moreover, it is not their function to argue a service position. The planning process provides plenty of opportunity for others to do the arguing!

After the Joint Staff position has been decided, the primary action officer publishes a "FLIMSY." This is a draft paper which is sent to responsible agencies in each of the service staffs. Each service agency appoints an action officer for the paper, who scrutinizes the FLIMSY and all revisions to it to ensure that, to the best of his ability, the final paper reflects his service's doctrinal and budgetary positions.

The FLIMSY is the vehicle through which the planning process begins. In about two out of three cases, the initial FLIMSY remains a workable framework to modify. In the third case, however, the FLIMSY falls completely apart under attacks by service staffs and an entirely

new one must be written. The FLIMSY may be a serious, thought-provoking effort by the Joint Staff, or it may be a "straw man"—an initial draft containing only enough information to serve as a catalyst. In the latter situation the Joint Staff action officer expects that consultation with his service staff colleagues will ensure the eventual inclusion of all important problem elements. In either case, as the Joint Staff primary action officer well knows, any resemblance between the FLIMSY and the finished, approved JCS position is almost coincidental.

The next step is the action officers' meeting. The Joint Staff primary action officer indicates on the FLIMSY when this meeting is to occur. All service action officers attend, after they have decided what changes their services want reflected in the FLIMSY.[9] If the paper involves serious strategic considerations where varying service positions are present, action officers' meetings are real squabbles. Arguments abound over such matters as the use of "will" and "should" instead of "might" and "could" because changes in these small words can radically alter doctrinal content.

Here the central problem involved in the present JCS strategy-making approach is encountered. This problem dominates the entire JCS planning process, but it is most significant at the action officers' meeting level. Because of the currently prevailing unanimity assumption, the harried joint and service staff officers know there can be no mutual solution to their various approaches to the FLIMSY—unless they do their best to accommodate everyone involved. Each service, of course, has its "stick points"—points upon which it has decided it cannot and will not compromise. However, these points tend to be few in number, and action officers will do all they can to ensure that new ones are not created. The services want "stick points" held to a minimum because they have assumed that, *unless the military services agree*, civilians are bound to make the crucial strategy determinations. Traditionally, military men have felt that civilians were not qualified to make such decisions.

Therefore, at the action-officer and all higher levels, the tendency is for service representatives to permit the inclusion of wordings and ideas satisfying the wishes of the other services—unless, by so doing, the interests of one's own service are damaged. On the other hand, officers representing the Joint Staff act principally as mediators, since in the final analysis the JCS does not exist apart from the services as far as the strategy-making process is concerned. Consequently, the primary requirement of those engaged in planning at both the service and joint levels becomes the attainment of a military position which does not injure the vital interests of any service.

The present JCS planning process operates to achieve unanimous military agreement. Until the present accommodation philosophy is changed, I believe the military voice in defense policy formulation will continue to be weak. If, to attain quality military advice, unity on JCS papers must be sacrificed, perhaps the sacrifice is worth making. The civilian in any case is going to play a major role in defense policy formulation. He should and he must. He is going to continue playing an inordinately large role, however, as long as achievement of consensus is the force guiding military strategists. Ironically, it seems that the military's input to strategy-making would be enhanced if it adopted the slogan, "disunited we stand, undivided we fall."

After the hectic action officers' meeting or meetings, the primary Joint Staff action officer publishes a "BUFF" edition which becomes an official Joint Staff position. To whatever degree possible, the BUFF will reflect the views of all the services as well as those of the Joint Staff. The service action officers go over the BUFF with a fine-tooth comb. In addition, concurring initials on the BUFF must be obtained from all those intraservice agencies that previously commented on the FLIMSY. If the BUFF fails to achieve appreciable consensus, additional action officers' meetings are called so that all attainable agreement is secured before a planners' meeting is scheduled.

Eventually the planners' meeting is held. Planners are designated senior officers (normally of two-star rank) from the services and the Joint Staff who represent their service chiefs and the Joint Staff agency head. They or their deputies meet to ratify action officers'

activities and to improve the quality of the paper. Planners may be able to accommodate certain differences remaining in the paper because they know, better than the action officers, what their chiefs will or will not currently accept. In addition, they are more experienced in the JCS process and, therefore, more able to exercise initiative than are the action officers. Often, moreover, planners may avoid controversy because many of the points at issue have been ironed out at the action officer level.

After the planners' meeting, the primary Joint Staff action officer publishes a "GREEN," a paper fully staffed and considered by the planners to be the best paper they could produce. The GREEN, with accompanying PURPLES[10] if any, goes to the Director of the Joint Staff, who places it on the Operations Deputies' ("Ops Deps") or Joint Chiefs' calendars.[11]

During the Ops Deps' or the Chiefs' meetings, the Joint Staff action officer is present or "on call" in an anteroom adjacent to the Chiefs' room (the "tank"). He provides the Ops Deps or the Chiefs with any additional information requested during their consideration of the paper. Also, each service action officer writes a "Talking Paper" which informally leads his Ops Dep and Chief through the entire staffing process—the background, key issues, delicate points, hearsay, personalities, politics, probable outcome, and table tactics. Action officers regard this paper as potentially the most important one they write in connection with each staff assignment. Once the Chief and Ops Deps are on their own in the "tank," their success in dealing with the paper from a service viewpoint often depends upon their advance knowledge of facts mentioned only in the Talking Paper. If any of the service controversies still remain unresolved, the Chiefs often will return the paper with new guidance to the planners' level for another attempt at accommodation.

Finally, the Ops Deps or the Chiefs, as appropriate, approve the paper. A red stripe is added to the bottom of the GREEN, indicating that the paper is an official JCS position. This position is then taken from the "red-striped" GREEN and sent to the Secretary of Defense. Service PURPLES that have not been accommodated are attached. A post-briefing is held at 1400 (or fifteen minutes after the end of the Ops Deps' or Chiefs' meeting, whichever is later), at which time the Director of the Joint Staff reads final decisions to all action officers who took part in the decision-making process.

I believe the quest for unanimous advice—obtained through the JCS strategy-making process as I have described it—prevents the military from making a significant input into defense policy formulation. The system is organized to ensure protection of each service's short-term interests (through accommodation) rather than to project upwards the logical, fully analyzed—although probably divergent—views of military strategists.[12]

The obvious questions follow. Why don't those engaged in service and Joint Staff planning realize that, while the compromises to which they continually resort may initially mitigate service differences, the resultant policy proposals are so inferior that no top policymaker is going to accept them? Do they not realize that service differences on strategy matters—if they reflect serious strategic issues—*will* be reformulated outside official military channels, either by civilians or military professionals, or both? And, finally, do service and Joint Staff planners not realize, in their shortsighted search for compromise, that ironically they bring about a result which they do not desire—the increased influence of civilians in strategy-making?

The military strategist does realize the consequences of an inferior defense policy formulation process. But, I contend, the system under which he must operate—the JCS planning process—is so restrictive that it is practically impossible for an input of value to run this gantlet. The military strategist knows that, through gaining more knowledge and system experience, he may increase the percentage of the final JCS team effort attributable to him. But—at least subconsciously—he also knows that most of the gargantuan effort which he and his colleagues contribute to a paper will be for naught because it will not influence top national security policy-makers.

I think a description of the JCS strategy-making process explains quite well why the

military are not making a maximum contribution to current defense policy. However, perhaps a few comments concerning problems peculiar to the system will better explain why accommodation at the lowest common denominator is the typical result of the planning process.

First, are such decision-making problems inherent in large organizations? Colonel William M. Jones (USAF, Ret) had extensive active duty at the service and Joint Staff action officer levels. In a recent RAND publication, Colonel Jones had this to say:

> To the outsider, you may appear to be involved in a daily mass of trivia, dialogues, and meetings. From your viewpoint, however, your numerous contacts are opportunities to influence the direction of the organization effort. Within this plethora of daily interactions and decisions you are urged into certain patterns of action by your sense of your responsibilities, your responsibility to the nation, to your Service, to your immediate superior, and to the members of your own organization. Notice here the existence of opportunities for internal conflicts. Your resolution of such conflicts is a personal matter and is dependent on the situation under consideration.
>
> Having had much experience on various military staffs, you are urged in your daily decisions toward a consistent pattern. You understand (possibly without consciously thinking about it) that your staff cannot function in support of you unless you are somewhat predictable to them. (Your superior must be consistent in his expressed views concerning things that influence your area of responsibility if he is to give you freedom, within bounds, to operate effectively.) To the outsider you may present a picture of a confirmed bureaucrat in your resistance to new and "better" ideas, but to you this resistance is the result of balancing a theoretical gain against the practical necessity of keeping your staff functioning effectively.
>
> Another factor being urged upon you continuously is the need to "keep it simple." To insure that your staff understands your views toward certain policy matters, many subtle variations that you may well understand will have to be omitted from your formal communications. A policy statement or published plan that contain numerous "if this—then that" considerations can produce confusion at the time it is to be implemented simply because of a wide divergence in view as to what the situation really is at the time. To the outsider this can result in the appearance of stupidity or "black and white" thinking, but to you it is the only way to operate effectively.
>
> In summary . . ., your job is one of decision-making in a management organization. The normal pattern of activities is such that your opportunities to make or influence obviously important decisions are much less frequent than your opportunities to make numerous small decisions. Most of your influence on the direction of the organization is the result of these numerous, small decisions. Consistency in the making of these decisions is, you feel, necessary for effective staff work and coordination. In addition, consistency enhances your influence on the over-all organizational decision-making since your beliefs as to what should be done are best expressed by a consistent pattern.
>
> Your decisions, as anyone's, are based on your prediction of the consequences if they are implemented. In the making of these predictions an important factor is the effect it will have on your organization and the probable reactions of other staff elements and associated agencies. Your ability to predict, and therefore influence, the probable attitudes and activities of other staff elements and associated agencies is degraded by your lack of adequate communications with them as compared with your daily communications with your own staff. Your communications with your staff are usually at the subformal, interactive level. Your communications with other staff elements tend toward the formal level. The result is that your predictions are based on mental images that can be grossly inaccurate. Finally, and quite important, you are not conscious of many of these influences.[13]

In addition to phenomena generally associated with any large decision-making organization, there are obstacles more peculiar to the military. I call these "prisoner problems." There are four of these kinds of problems, and they graphically illustrate why the present JCS strategy-making system produces "waffled" papers—and why the individual caught up in the process can do so little to improve matters.

Probably these problems also are common to most highly centralized organizations, but they get expressed in specific, clearly defined ways in the military planning process.

There is the great possibility that service staff officers may become prisoners of their service chief. Each service maintains a set of position papers furnishing that service's current viewpoints on any and all matters involving strategy alternatives. Naturally these position papers reflect—or, what may be more important, *are thought to reflect*—the chief's philosophy, although many staff officers may have participated in the papers' derivation.

The principal point is this: a service action officer interprets every issue raised in every paper in terms of what he believes to be his own service's strategy position. And, one would judge, he must. He is probably intellectually committed to his service's positions. But, even if he had doubts about certain issues, he would not be likely to raise them while working as a service action officer on a JCS paper. The action officer cannot afford to spend too much time on any single paper. If he does, work on other studies is bound to suffer. Therefore, he would want to be certain he was right and his superiors wrong before he decided to "muddy the waters." His commanders probably have told him to have ideas and to advance them boldly, but they hardly want him to generate a debate at the top level on literally hundreds of issues on every JCS paper to which he is assigned! Service strategy positions *do* change —but not because service action officers got their chiefs to agree to revisions while they were working on a particular JCS paper.[14]

Staff action officers also may become prisoners of senior staff officers. This is a problem experienced by every large bureaucracy with numerous responsibility levels. I see no necessity to discuss this issue in any detail. As far as service staffs are concerned, it will be either a slight or a grievous problem depending upon the degree to which human relations, leadership, and internal communication lines are in evidence at all command levels. However, the potential for a unique manifestation of the staff prisoner problem is found in the Joint Staff when, for instance, the Joint Staff officers involved in a paper are an Army action officer, an Air Force deputy agency head, and a Navy agency head.

Another prisoner problem that exists is one not so immediately apparent. Service action officers can make prisoners of their chiefs. General Taylor has indicated how real this problem can be:

> Every Chief has to be alert to the danger of becoming a prisoner of his Indians, [action officers] who are generally able and enthusiastic young officers trained to defend their views fearlessly before their superiors. I remember a briefing of the Army Chief of Staff several years ago, when the Deputy Chief of Staff, a lieutenant general, was passed a piece of paper during the conference. With a laugh he read it to the group. "If the Chief of Staff tries to change line 2 of page 4, oppose him at all costs. Signed Majors Miller and Mock."[15]

It is almost impossible to imagine how busy a service chief is. The tasks to which he must give some attention in his responsibility as service head are a hundredfold. Also he must devote the major portion of his time to the corporate duties which he incurs as a member of the JCS.

As former Deputy Secretary of Defense Roswell L. Gilpatric suggests, the chief's workload can be overwhelming.[16] The service chief, therefore, must rely to a heavy degree upon his staff, and especially so in those areas where his own expertise and experience do not provide an all-inclusive guide. Obviously, modern strategy-making is often one of those areas. There is a real—and, I believe, an increasing —danger that the service staff will take its chief captive. And, to complete a vicious circle, it is likely to be a service staff that is *itself* a prisoner of its chief because of the current set of position papers!

Finally, chiefs can become prisoners of the other chiefs. Sometimes a chief will have corporate responsibilities which he believes overshadow service commitments. He may wish to take a broad view on strategic matters even if it means a short-term position loss for his own service. But is a chief likely to take such a conciliatory approach unless he is assured, somehow, that all other chiefs will act similarly? If

the other chiefs do not adopt an analogous approach, the pacificatory chief soon would be reigning over a disappearing service! Therefore, the natural tendency is to wait for some *other* chief to initiate the concession process. Such a process *is* possible; I am certain the chiefs sometimes utilize it. But it is difficult to make it the normal decision-making pattern because of fears that reciprocity will not prevail. Like the other prisoner problems, this one demonstrates that existent military bureaucracy mechanisms intensify those tendencies in the JCS strategic planning process leading to accommodation at the lowest common denominator.

Let me make it clear that it is not my intention to ridicule either those who devised or those who have utilized the JCS planning process. Given a belief that a single military viewpoint should be projected upward, the present system was the natural and logical resultant —especially in an environment where the individual services were not merged. There is nothing inherently "military" in the JCS planning procedure. It is quite typical of many large-scale civilian organizations where decision-making involves the adjustment of positions held by semiautonomous suborgans.

What can be done to increase the military's input to defense policy formulation? Manifestly, there must be significant improvement in the quality of military advice given to national security policy superiors. But how is this to be accomplished?

Many interested observers, both civilian and military, have suggested that the problem is essentially one of staffing. They believe the "whole man" approach to officer training and advancement is outmoded in this world of increasing specialization.[17] They feel that no single individual can ever accumulate enough expertise to know even the important weapon systems of his own service, especially with technology creating doctrinal and operational revolutions almost daily. Particularly outmoded, they declare, is the idea that any officer who has distinguished himself in the field for a considerable number of years is thereby qualified to do Pentagon-type work, specifically in the strategy-making area. The military input to defense policy formulation will increase markedly, they aver, when the services decide to staff their strategy-producing agencies with what Professor Huntington calls "military intellectuals," military men with graduate degrees in relevant social and engineering sciences who devote the major part of their careers to intellectual endeavor applicable to defense policy-making.

Unquestionably, this argument has much merit. It is nonsense to expect an action officer to write a valuable paper in two weeks on, say, the JCS position vis-à-vis the Soviet-proposed NATO-Warsaw nonaggression pact when, prior to the assignment, that officer did not know the history of such proposals, the political context within which they have been suggested, or the specific positions that the U.S. and its allies have taken on past proposals of this nature. The services *are* recognizing the need to relate education and relevant experience to critical planning positions. And they are showing a willingness to dip lower in the rank structure to obtain people equipped with the proper intellectual and experience qualifications. Relatively young officers are no longer complete strangers in the Pentagon.

I believe, however, that those who see the answer to be improvement in personnel quality have, by and large, missed the essential nature of the present JCS defense planning process. Any organization can use better people, and this is certainly true of service and joint staffs, although I think present service and joint staff planners are far better than "staffing enthusiasts" have considered them.

I would argue, therefore, that even if all the services could fill their strategy-making organs with ideally qualified people the problem of a weak military voice in defense policy formulation would remain. The problem exists primarily because JCS planning procedures drastically reduce the opportunity for the military to contribute to strategy-making. If there really were a single, fully analyzed military viewpoint, the system might work.[18] However, due to the differing environments, experiences, and operational requirements of military professionals in the many sublevel organizations involved, there is no single military position on

the multitudinous defense policy issues which constantly confront strategy-makers. Therefore, efforts to create such a position lead to low-quality, least-common-denominator solutions which have been the typical product of JCS planning procedures. These "solutions" will seldom, if ever, be accepted fully by top strategists, since—as I have tried to indicate—modern defense policy issues are too important. Ironically, until we learn that the military *cannot, will not,* and *should not* attempt to preempt defense policy formulation, advice from military men will continue to be disregarded because it will be demonstrably "waffled."

THE ATTEMPT to formulate a single military point of view on strategy—through the JCS planning process—has failed. The danger is that planning—theorizing about war—may be done mostly by people having no relevant knowledge of combat or of field preparation for various modes of combat. I believe that significant inputs to strategy from the military can come only from individual officers having broad experience in operational military problems *as well as* superior understanding of all those nonmilitary factors essential to formulation of national defense policy. These officers, while necessarily representing responsible military organizations, must be permitted to speak as *individual* members of a strategy-making team. Under the present circumstances, the military man finds it difficult even to get on the bench of that team.

Until we learn that, on most defense policy issues, a single "military" position cannot be attained without unacceptable reduction of quality, the input of a thousand modern Napoleons into the Pentagon will make very little difference, and defense policy formulation will remain the primary domain of the civilian.

United States Air Force Academy

Postscript

It is gratifying to note that present members of the JCS have recognized the degree to which consensus seeking can inhibit the military input to national security matters. In a 14 September 1965 letter relating to the clearance of this article, the Office of the Joint Chiefs of Staff noted:

> Although there is no question that there is a strong desire for agreement, particularly at the "Indian" level, the present Chairman and Director have gone firmly on record against the very evil the author is speaking about. The record shows that their preference—to present dissenting opinions rather than "waffling" a paper into an inferior proposal—has borne fruit.

Although one happily notes this change in approach by the Joint Chiefs themselves, the *process* by which papers reach the Chiefs still has not been altered in any essential way. The process continues to emphasize compromise, and the JCS themselves remain to a degree slaves of the procedure.

L. B. T.

Notes

1. Samuel P. Huntington, "Power, Expertise, and the Military Profession," *Daedalus,* Fall 1963, p. 801. I think this is debatable. For instance, General Maxwell D. Taylor's book, *The Uncertain Trumpet* (New York: Harper and Brothers, 1959) seems to have influenced the defense philosophies of both President Kennedy and Secretary McNamara.
2. "Letter to Senator Henry M. Jackson from McGeorge Bundy," *Administration of National Security—Selected Papers,* Subcommittee on National Security Staffing and Operations, Committee on Government Operations, U.S. Senate, 87th Congress, 2d Session (Washington: U.S. Government Printing Office, 1962), pp. 5–8.
3. In fact, experience, if irrelevant, may becloud analysis and make one's defense policy advice inferior. In an era of great technological change where, as Herman Kahn says, there is a revolution in weapon systems every five years, military strategists constantly must ask themselves whether their experience is relevant to contemporary doctrines concerning the use of force.
4. I am *not* arguing that cost analysis and other analytic assistance techniques are valueless. On the contrary, the strategist needs all the assistance he can get; but even under the most imaginative utilization, many very important decisions will not be subjected to mathematical and other modular frameworks.
5. U.S. Department of Defense, *Brief of the Organization and Functions, Secretary of Defense, Deputy Secretary of Defense, Defense Staff Officers, Organization of the Joint Chiefs of Staff, Department of Defense Agencies, Joint Service Schools,* prepared by Administrative Services Division, Office of Administrative Assistant to the Secretary of Defense, April 1963, p. 13.
6. Robert S. McNamara, "McNamara Defines His Job," *New York Times Magazine,* 26 April 1964, and Roswell L. Gilpatric, "An Expert Looks at the Joint Chiefs," *New York Times Magazine,* 29 March 1964.
7. Joint Staff action officers are usually colonels or lieutenant colonels. Service staff action officers are usually majors or lieutenant colonels.
8. In fact, a Joint Staff officer who is too active or obvious in pushing the interests of his own service may lose his job.
9. Individual services and service action officers will handle this matter differently. However, considerable intraservice coordination *is* necessary. On most actions, intelligence, war plans, logistics, or research and development staffs are involved and must be consulted. For instance, on an arms control matter involving strategic forces, the Army arms control action officer must get "concurring initials" from at least three other Army agencies.
10. Individual service disagreements to the GREEN are reflected by an accompanying paper outlining all the points of discord and indicating why that service believes wording changes should be made. This accompanying paper is called a "PURPLE." If there is *any* chance of removing a service's PURPLE, additional meetings (at the action officers' or planners' level, as deemed appropriate) will be called by the primary Joint Staff action officer. For easy identification, papers in the

BUFF and GREEN stages actually are published in the appropriate colors.

11. The Operations Deputies are generals and admirals of three-star rank who occupy concurrently key positions in the staff of their respective services (usually in Planning and/or Operations). They relieve the Joint Chiefs of many secondary matters and do the "preliminary spadework on major matters prior to consideration by the Chiefs." Taylor, *op. cit.*, p. 88.

12. I admit to "begging the question" regarding the military organizations that should be represented at the "strategist" level: perhaps the three services; perhaps the unified and specified commands; or perhaps some other arrangement considered functional. This is a complex and extremely important question. However, my aim in this article is to argue that the fully analyzed viewpoints of military strategists ought to be represented (rather than amalgamated) at the highest policy-making levels.

13. William M. Jones, "On Decisionmaking in Large Organizations," *RAND Memorandum RM-3968-PR*, March 1964, pp. 11–12.

14. I am not implying that the chiefs are narrow-minded. Since they undoubtedly have been action officers at one time or another, they are aware of the "prisoner" problem to which I refer. They are likely to listen when an action officer argues for doctrinal changes.

15. Taylor, *op. cit.*, p. 90.

16. Gilpatric, *op. cit.*

17. For instance, in 1963 the Air Force divided its officers among 40 "utilization fields," 198 air officer specialties, and 309 specialties and subspecialties. See U.S. Department of the Air Force, *Officer Classification Manual AFM 36-1*, 15 April 1963.

18. Between 1962 and 1964, there were indications that a new JCS planning procedure—which tried to create a single, fully analyzed military position—was utilized. The *New York Times* stated (4 February 1964) that General Maxwell Taylor (Chairman of the JCS, 1962–1964) wanted a single chief of staff, with the role of the present Joint Chiefs changed to that of "a new advisory body called provisionally the Supreme Military Council." See Taylor, *op. cit.*, pp. 126–29. However, said the *Times*, since the change General Taylor wanted requires a change in law:

> ". . . informed observers in the Pentagon say that General Taylor, as Chairman, has come as close to being a de facto single chief of staff as any man can be without a legal change.
>
> "The Chairman's staff group of about 25 officers, organized on regional and functional lines, examines every paper prepared by the Joint Chiefs of Staff and freely suggests alterations intended to bring the papers into line with the views of the Chairman.
>
> "If the revised papers are not approved by the Joint Chiefs of Staff, General Taylor nearly always wins the approval of Defense Secretary Robert S. McNamara for the versions he favors, it is said."

In effect, General Taylor created a truly joint staff within the Joint Staff. Reputedly, General Taylor introduced another revolutionary idea: he assigned a paper to the Joint Staff with instructions *not* to include service action officers in the planning process. The services were allowed only to comment on the finished product.

A final technique of the present administration is the following: One of the DOD Assistant Secretary of Defense Offices (usually ASD/International Security Affairs) sometimes assigns—through the JCS chairman—a particular strategic problem to a Joint Staff agency. One study concerned the use of tactical nuclear weapons in a European limited war. The Joint Staff agency was given a *year* to do this study. The result was an excellent, thoroughly staffed piece of work including scores of war game results, etc.

While these ad hoc evolutionary arrangements probably did increase the quality of JCS papers, they gave the impression that single, fully analyzed, logical military viewpoints *do* exist in defense policy areas whereas this is normally not the case. A far better arrangement, I believe, is to permit the projection upward of completely staffed papers from those military organizations which have current defense policy responsibilities—even if this means (as it inevitably will) that the military no longer speaks with one voice.

NATO DEFENSE COLLEGE AND BEYOND

Up the Path to Greater Unity

COLONEL RICHARD J. STILLMAN, USA (Ret)

General Lyman L. Lemnitzer, USA, Supreme Allied Commander in Europe, arrives at NATO Defense College for the opening of the 28th Course and is greeted by the Commandant, General Duilio Fanali of Italy.

THE NATO Defense College in Paris, France, established fifteen years ago, was the first truly international military school in history. The students are middle-aged officials from NATO countries, who spend five and a half months together studying political, economic, and military subjects as they relate to the Alliance.

Attendance at this college—and I had the good fortune to be a member of its faculty for three years—has convinced many of the need for an extensive international military educational system. Let us look critically at the NATO Defense College to see how it is different from national schools and examine how this institution could serve as a model for an Atlantic Alliance university. Although a step in the right direction, the NATO Defense College is of limited value because it offers too little and comes too late in the lives of its students. Now we need to decide whether an effective educational program can be established that would truly strengthen the Alliance.

NATO Defense College

The NATO Defense College welcomed its first 47 students from 10 nations on 19 November 1951. Its birth was due in large measure to the efforts of General Eisenhower. Shortly after becoming Supreme Allied Commander in Europe, he recognized the need for an international college in order to secure well-qualified officers and civilians to fill key NATO positions. General Eisenhower summarized his views on this subject in a telegram to the NATO Standing Group:

> My efforts thus far to find suitably trained staff officers for key positions on high level NATO staffs and my discussions of NATO problems with officials associated with National and NATO agencies have convinced me that there is a high priority requirement to develop individuals, both on the military and on the civilian side, who will have a thorough grasp of the many complicated factors which are involved in the problem of creating an adequate defense posture for the North Atlantic Treaty area. . . . These considerations have brought me to the conclusion that it is highly desirable to establish in the near future a NATO Defense College for the training of individuals who will be needed to serve in key capacities in NATO Organizations.

mission

The mission of the college today is based upon SACEUR's suggestion that the program ". . . include a study of military, political and economic factors which influence our NATO defense efforts as well as a consideration of specific problems in both the military and the political fields for which satisfactory solutions may not yet have been found."

The commandant is responsible for providing instruction in four areas:

- Organization and aims of the North Atlantic Treaty Organization and major factors involved in NATO defense
- Problems concerning the preparation and conduct of NATO forces for war
- Organization and working of NATO bodies and staffs
- Language comprehension of French or English according to the needs of the individual faculty officers and members.

The NATO Defense College was to be patterned after the member nation's highest military schools, such as the Imperial Defence College in London, the National War College in Washington, and the Institut des Hautes Études de Défense Nationale in Paris. However, shortly after its inception it was apparent that a pervasive difference existed between national schools and this international college. The mission itself emphasized the need for language comprehension, which is complicated by the fact that 13 different cultures with 10 different native tongues are brought together for each course.[1] The language and cultural barrier is the key difference between the national and international schools. Unfortunately, this basic fact is least understood by the United States. A senior War College commandant told me: "Hell, it's a waste of time to send U.S. students to the NATO College—we give them the same subjects at home." He missed the point completely—it is not the curriculum that

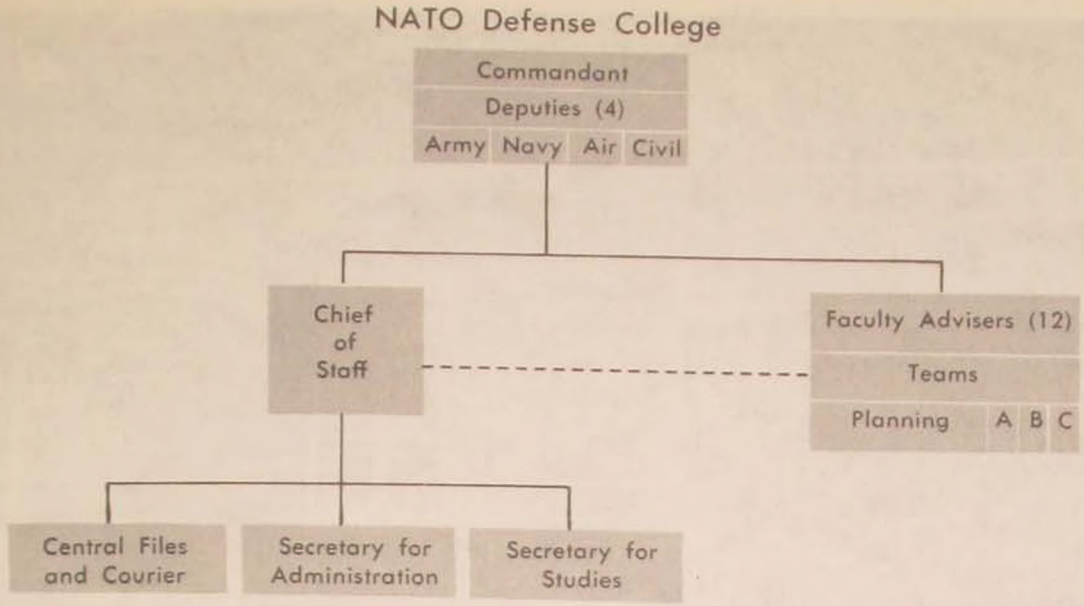


Chart I. Organizational structure of the NATO Defense College. One of the four Deputy Commandants is appointed Director of Studies, and the French Deputy is the Director of Administration. The dotted line indicates coordination on administrative matters between the Chief of Staff and the faculty. The Director of Studies is Chief, Planning Team, and responsible for coordination of studies. The other three Deputies are Chiefs of Teams A, B, and C.

is important but the associations and resultant understanding from intercultural exchange.

organization

Multination organizations are expensive of personnel and rank. The NATO Defense College proves no exception to this liberal manpower policy. A commandant (lieutenant general), four deputies (brigadier and major general rank), and 12 faculty members (colonel rank) are available to support 54 students. (Chart I) In addition, administrative, messing, and other services require a permanent staff of 125 persons plus 10 part-time language instructors. The college draws on outside lecturers to provide the vast majority of conferences and spends about one month out of five and a half on tours as guests of NATO nations.

Proposals have been made to reduce the number of people working at the college. For example, it has been suggested that three of the deputies be eliminated and a vice-commandant be appointed. Funds, it was argued, could be saved and administrative mishaps reduced by elimination of such problems as faculty members working for three chiefs at the same time. However, the facts of international life precluded such efficiency. Three deputies come from Standing Group nations; the fourth is on a rotational basis from other NATO countries. A recommended reduction in almost any area raises the cry, "But our national prestige!" Another facet adding to heavyweight international staffs is what I call the formation of "national clusters." Each chief endeavors to surround himself with key people of his own country.

selection of students

How does one get assigned to the NATO Defense College? It is often a mystery. First the mechanics: selection is made by each gov-

The garde républicain *stands at attention to welcome distinguished visitors to the École Militaire, the Paris residence of the NATO Defense College.*

ernment to fill 60 spaces based upon quotas and criteria established by the Standing Group:

Belgium	3	Luxembourg	1
Canada	4	Netherlands	3
Denmark	3	Norway	3
France	7	Portugal	2
Germany	6	Turkey	3
Greece	3	United Kingdom	7
Iceland	1	United States	7
Italy	7		

The commandant states in a letter to national authorities: "I cannot emphasize too strongly the necessity of designating outstanding members for the course. . . . " and he encloses Standing Group Policy Guidance on the subject:

> Students will be officers and civilian officials of NATO countries whose home governments consider particularly qualified in temperament, education, professional background and experience to serve in the future in high NATO or NATO-related positions. These qualifications should be generally comparable to the entrance and retainability criteria established for enrollment in national defense colleges (or comparable institutions) operated by national governments. In addition, students should possess a basic knowledge of either English or French sufficient to effectively participate in the college program from the beginning of courses.

Rank of students was established at colonel/lieutenant colonel level, with a representative distribution among Army, Navy, Air Force, and civilians.

Now let us look at how the governments are meeting the established criteria, based upon some 1500 graduates from 29 courses. Average age approximates 43, but the spread within classes is 32 years, 27 being the youngest and 59 the oldest. Their civilian education varies from 8th grade to postdoctoral training; military education from highest national institutions to no advanced schooling; language facility from speaking six languages fluently to barely comprehending 10 percent of one of the two official tongues. Experience ranges from two obscure assignments at home to a number of highly responsible positions throughout the world. Rank ranges between major and major general.

It is apparent that the variations in background, training, and language comprehension in no way compare with those at a national college. Such wide differences require the college to spend the first eight weeks in basic background material, with emphasis on language comprehension and providing opportunities for getting to know each other. In spite of these efforts there is still a remarkable difference in the values gained by the various members from such a school experience.

In spite of established standards and statements to the contrary, each nation does pretty much as it pleases in the selection of its personnel. An example of this independence is shown by the United States. It has been asked repeatedly to send its most outstanding officers—in fact six special reports were written on the subject. Nevertheless, it continues to provide individuals who are not slated for general-officer rank and who have just completed a lower-level staff college. Those promoted to general officer after graduation from NATO Defense College range from 3 percent in the United States to 35 percent for a smaller European member.

program of study

The 5½-month course of instruction is divided into three segments. The first covers the mission of NATO, the resources available to support this mission, and the threat against it. The second segment investigates problems of direct interest to NATO but which arise in areas outside the NATO area, including the uncommitted areas of the world. The third segment is an analysis of how well NATO is organized to meet current and future problems and what courses of action might best be adopted to overcome them.

No written problem is required of the students during the first eight weeks. Past experience has proved that, because of the language and cultural barrier, little was gained from the written problem except by the one or two individuals in each committee who were responsible for its preparation. Written problems are always a committee effort, and no individual

thesis is required; the primary reasons are the time factor, language difficulties, and the emphasis on teamwork.

The afternoons of the first eight weeks are devoted to seminars, composed of six or seven students, in which free discussion is encouraged. The sole writing required of the students during the opening period of a previous course was the preparation, by each committee, of a question to the commandant based on his talk, "Historical Background of NATO." The difficulties involved were expressed by a Greek student: "Six men from six different nations of the Alliance sat around a table at the NATO Defense College trying to draft a question. It took fifty minutes to agree on the following wording because we just didn't understand each other: "If in the Fall (Autumn) of 1956, the U.S. was not engaged in a Presidential campaign, do you think that the attitudes of the U.S. government concerning Suez and Hungary would have been different?"

"A gentleman's course" has been the remark of many English- and French-speaking students. A typical working day is as follows:

0915–1030	Language instruction
1030–1145	Lecture
1145–1300	Question period
1300–1430	Lunch
1430–1700	Committee work on written problem or oral discussion group
1700–1800	Instructional film.

It is a five-day working week, with Saturday morning optional for cultural visits to various interesting sights in Paris and the surrounding communities. The reading program is light for the people who have native ability in French or English. However, as the majority come from countries that do not use French or English as their basic language, most students must do much homework at night and on weekends if they wish to keep up with their colleagues; some do, others can't. A Turkish friend of mine put it this way: "I comprehend fully about 50% of a lecture that is spoken in French; this may vary from 95% to 30% depending upon the speaker concerned. However, when I utilize the earphones in the simultaneous translation from English to French the average drops to 25% and may be as little as 6%."

as others see us

A crushing blow to national ego occurs occasionally at student presentations which are based upon written work developed in committees. "A NATO Philosophy" was the title of a problem given to a recent class. The aim of this project was "to analyze the ideological foundations of the Alliance in order to see whether a philosophy and doctrine can be deduced and effectively applied by NATO and nations sympathetic to NATO in the struggle between East and West for the minds of men." This subject involved consideration of the following questions:

(a) What are the philosophical and ideological foundations of the Alliance?

(b) To what extent are these foundations common to members of NATO; and insofar as they may not be common, what effect does this have on the strength of the Alliance?

(c) What are the broad lines of a NATO politico-psychological strategy which can now be adopted to enable the West, under the leadership of NATO, to win the vital "struggle for the minds of men"?

Each committee was required to prepare a short paper of not to exceed 20 pages and present the highlights to the class. One group chose to point up how the 15 NATO members are abiding by the basic principles of the Alliance. As no member of this committee was from the United States, it provided an excellent insight as to a European viewpoint.[2] The United States stood alone in racial discrimination and was considered with four other NATO nations as having a "colonial problem" and "outlawing the Communist Party." This singling out of the United States for discriminatory racial practices evoked questions from several American students, who pointed up the Portuguese treatment of the Angolese, the position of the Algerians in France, and the colored in the United Kingdom. Yet the European argument persisted that Portugal, France, and the U.K. provide an equality which does not exist in the United States. A heated argument ensued

At the twelfth Annual Conference of NATO Defense College in June 1965, the central theme was the sharing of nuclear responsibilities. The participants included (left to right) Brigadier Honeybourne, U.K.; Mr. Newhouse, U.S.; Marshal of the RAF Sir John Slessor, U.K.; General André Beaufre, France; and Mr. Wilhelm Cornides, Germany, who led the round table.

in one committee, in which a member said that the same or worse ghetto conditions exist for the Algerians in France and the Sicilians in Italy. However, this thesis was not accepted by the majority as being in the same light as the widespread discriminatory treatment of the American Negro.

analysis of speakers

Like every academic institution, the NATO Defense College endeavors to secure well-qualified speakers who can present their topics effectively. Unfortunately, "lemons" are interspersed occasionally.

As a means of keeping my own interest alive, in view of hearing six lectures on similar subjects over a period of three years, I kept a box score of lecture traits. The Anglo-Saxon speakers averaged 52 minutes on the platform, whereas the Latins averaged 72 minutes. The longest-winded orator took 134 minutes and had a 30 percent sleep count at the end of his presentation. The briefest Anglo-Saxon speaker spoke for 29 minutes.

Europeans have little use for training aids, and Americans overplay the art. In one instance a theater commander with four assistants had charts flowing at the rate of two per minute! They included a picture of the building where he worked.

Seventy percent of the speakers read vir-

tually every word of their presentation from a prepared text. Another 20 percent followed only an outline or spoke from memory, using their native tongue. Utmost respect went to a German, Professor Mehnert, whose thought-provoking talk of 58 minutes entitled "Communist China and Its Relations with the Soviet Union and the Non-Aligned Countries" was delivered in letter-perfect English with nary a note.

The most distracting speaker was an individual who stuttered 104 times during the early and middle portion of his presentation. One of his compatriots said, "I was a nervous wreck in sympathy with his difficulty but had only admiration for his fortitude." During the question period he was more relaxed and the defect less noticeable.

A novel approach to the "no notes" school was demonstrated by a former U.K. military attaché to Moscow, Colonel Burrows, who spoke on life in the U.S.S.R. using only a large map of Russia for background. After telling the audience he would speak on the *A B C*'s of the Soviet Union, he proceeded to give an interesting and amusing presentation, using each letter of the alphabet to introduce a topic.

The Europeans at the college responded more favorably to the philosophical talks that required them to think. The "whiz kid" Americans scored highest, and the chart-carrying speakers were awarded low ratings every time.

trips

During the 5½-month course, the college as a group visits the NATO countries in Europe and North America. On these trips distinguished national authorities lecture on political, economic, and military matters. Renowned cultural sights are visited, but members also find time for informal local amusements, which some say do more toward furthering closer relations within the Alliance.

Briefings are given by NATO authorities during these trips, and opportunities are provided to see units in action. For example, a recent class visited elements of the Central Army Group (CENTAG) composed of French, German, and United States ground forces. The students observed units of the 2d Armored Cavalry patrolling the 322 miles of border of West Germany, East Germany, and Czechoslovakia. Helicopter flights enabled the students to observe firsthand the troop installations and a practice alert. CENTAG also sponsored a realistic demonstration on the 88-mile-square training area at Grafenwöhr, where a combined force of French, German, and United States infantry, armor, artillery, and supporting units staged an attack on a fortified area.

The close association provided by the extended field trips does much to further international understanding. Each host country makes a special effort to entertain the students both in large party groups and in individual visits to homes. One response to a questionnaire summed it up: "This is the best way in which I learned to know and respect other cultures and ways of life."

problems

The college has its share of problems, and the first four which I shall mention can, in a wider sense, be found in the Alliance at large.

Communication. Lack of communication and inability to understand each other are the greatest weakness of this institution. Differences in terms even of a commonly derived language are often compounded during translation. Lectures given in English are simultaneously translated into French. Difficulty and failure in communication breed mistrust and foster dependence on fellow countrymen.

Overstaffing. An international institution is prodigal of personnel and time. Five officers of general rank, 12 colonels, and 125 administrative personnel are engaged in servicing 54 students. Each nation has its own way of preparing studies, giving presentations, keeping records, etc. To learn each other's *modus operandi* requires considerable time. The turnover of military personnel every two or three years further aggravates the problem by requiring the process of learning anew.

Pay. A distinguished retired general told a recent class that a master sergeant in the U.S. Army receives more pay than a French colonel. One senior officer at the college is entitled to

President John Fitzgerald Kennedy, in welcoming the touring 23d Course to the United States and the White House, emphasized that "the future of the West lies in Atlantic partnership," adding "Associations such as the NATO Defense College foster such partnership."

a driver, aide, sedan, and secretary. His counterpart receives 1/3 the pay and none of the other emoluments. These variations in benefits are at times under much heated discussion. A frequent question is, Why not equal pay for equal work?

Lack of Sovereignty. The fact that members of the Alliance come together as equals without a boss gives an air of informality. Students do not feel the great sense of competition so dominant in national institutions. For the staff and faculty the authoritative chain of command is replaced by a "kid glove" approach in dealing with other nationalities. The result is less work with less exacting standards; and where feasible, reliance is placed upon brother officers as orders are issued.

Living Facilities. Paris is Paris: her delights are never-ending. But it presents difficulties. The college itself has poor classroom equipment and no accommodations. Each individual is on his own to secure lodging in an expensive and limited market. Most students go it alone after hours or mingle with their own nationals. Invitations to visit homes and develop close friendships are few. French attitudes reflect a war from 1939 to 1963 that has frequently involved brother against brother and a social life revolving around the family.

The NATO Educational System of Tomorrow

Lack of sovereignty, communication difficulties, overstaffing, and pay differentials are some of the factors that make this Paris polyglot different from national institutions. From

the vantage point of the NATO Defense College, solutions are not easy because much of the jurisdiction is beyond its control. However, fifteen years of multinational experience has produced sentiment for change, to better prepare the students for their role in NATO affairs. This change in concept has been pointed up by the last commandant, who expressed his "deep conviction that the failure to modify the College would do a great injustice to NATO." In a letter to the Standing Group he urged that the course be extended to ten months. "I feel so strongly that the College must be reorganized in the light of the present and future problems facing the Alliance." The extension of the course to ten months, he said, would permit the college to accomplish the following:

(1) Provide language training of sufficient depth to give those students in dire need of such training the basic background to do an adequate job at the college.

(2) Provide opportunities for leadership through development of studies, presentation of oral reports, and analyses of NATO problems.

(3) Provide an annual tour to North America. The college has visited North America on only two occasions. The opportunity to visit this bastion of the Alliance should be a mandatory part of the college curriculum.

(4) Require that a thesis be written by each student, at the level of a graduate at a civilian university.

Positive results can be achieved by acceptance of these recommendations. But this improvement still begs the real issue.

Although the NATO Defense College provides students with a fresh perspective and serves a purpose in training senior officials for important Alliance billets, it appears to offer, according to one distinguished graduate, "too little too late."

This "too little too late" philosophy was supported by a questionnaire that I developed for distribution to selected graduates, to obtain their views on the value of the NATO Defense College and to secure recommendations for improvements. In his covering letter the commandant specifically invited "criticism on any aspect . . . you deem worthy of comment." Replies were received from 124 graduates, and to a remarkable degree they backed the need for international military educational institutions. Over 95 percent said that the college gave them considerable professional assistance in a NATO-related assignment. Of greater significance were their written comments expressing concern that the present schooling was inadequate: "Establish such a school for younger men and on a one-year basis"; "Expand NATO-wide educational opportunities, with our College at the peak"; "Provide multinational courses for other age groups." Sir Lawrence Darvall, former commandant of the NATO Defense College, struck at the heart of the problem:

> If we can plant the germ of new loyalties in mature men, how much deeper are the roots we could sink in the youth of the Atlantic community, if at their most impressionable period we could gather them together in residential colleges making them members of a self-governing community which demands much of them?

Does it not seem reasonable, if we are seriously interested in furthering the Atlantic Community, to establish a strong NATO military educational system? Here we could provide schooling at all levels for highly select military leaders in international affairs—both for today and tomorrow. I would visualize eventually a NATO university complex located at key areas in Europe and North America.[3]

Overall responsibility for this allied educational program would rest with the North Atlantic Council. Policy guidance would be furnished by a Military Education Subcommittee, with senior officers, appointed by the Military Committee, to administer and guide the various institutions. Levels of schooling would be patterned after the systems presently in-being for the major national powers. At the apex would be the present NATO Defense College, but it would be expanded to compare favorably in size, duration, and physical plant with the United Kingdom's Imperial Defence College, France's Institut des Hautes Études de Défense Nationale, and the United States' National War College.

Below this top-level school (colonel and general-officer rank) would be a field-grade "NATO Command and Staff College." General

Eisenhower recognized a need for such a school at the same time he recommended establishing the NATO Defense College. He informed the Standing Group on 25 April 1951: "I am . . . having my Staff Officers consider the advisability of setting up a school for NATO Staff Officers for the study of staff procedures and tactical doctrines."[4]

This ten-month course would be open to senior captains, majors, and lieutenant colonels. As part of the "NATO Military University," it would be situated so as to take advantage, where appropriate, of speakers and other facilities utilized by the NATO Defense College. Proximity to SHAPE, NATO headquarters, and AFCENT would also be helpful.

The curriculum would qualify officers to fill NATO middle-level command and staff appointments by studying modern war on an inter-allied basis. Considerable time would be devoted to tactical doctrine, with a view to widening their knowledge of Alliance problems—such as the multilateral force, NATO division, standardization, and infrastructure.

Highly qualified junior officers would spend ten months at a NATO Basic School—Army, Navy, or Air Force. The schools could be situated in major training areas, with Army and Air Force schools located in Germany. Here, for example, NATO's young Army officers would have an opportunity to be near elements of SHAPE's Mobile Force. School objectives would include development of teamwork and a basic understanding of the problems confronting NATO at the unit level. All students would be required to gain proficiency in an additional language and be familiar with the history and culture of each Alliance country.[5] The Air Force school could be set up at Ramstein, where we have French, German, and U.S. combat-ready Allied Tactical Air Forces.

A NATO Naval Basic School might best be stationed under Allied Command Atlantic in Norfolk, Virginia. Young graduates from such a school would be very valuable in furthering the multilateral force. Seven NATO nations are now participating in a large-scale mixed-manning demonstration aboard the USS *Ricketts*. This guided-missile destroyer, based at Norfolk, carries 18 officers and 316 enlisted men. Graduates of a NATO Naval Basic School could contribute much as part of such a mixed complement. Their school experiences with complex weapon systems, language proficiency, and understanding of their fellow sailors would make them ideal candidates for MLF assignments.

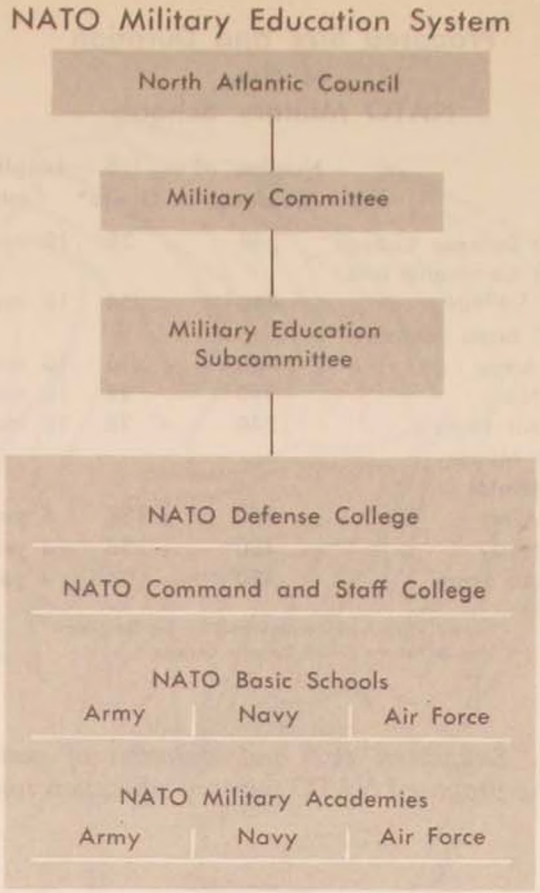


Chart II. Proposed NATO military educational system, to supplement the traditional national systems

This proposed NATO military educational system would normally supplement our present national schooling. (See Chart II.) For example, selection of U.S. Air Force personnel to attend the NATO Air Force Basic School would be from junior officers with 3 to 6 years' service. They would have completed, where appropriate, their basic course in the United States and served as unit commanders for at least one year. Volunteers would be accepted to fill our national quota of 28 spaces. (See Chart III.) Only those individuals with outstanding records, including French language proficiency,

Proposed Size and Duration of the NATO Military Schools

	Number of Students	U.S. Quota*	Length of Course
NATO Defense College	240	28	10 months
NATO Command and Staff College	480	56	10 months
NATO Basic Schools			
Army	480	56	10 months
Navy	240	28	10 months
Air Force	240	28	10 months
NATO Military Academies			
Army	960	112	4 years
Navy	480	56	4 years
Air Force	480	56	4 years

*Based upon quota established by the Standing Group for the NATO Defense College.

Chart III. Suggested size and duration of components of the proposed NATO military education system

should be considered. Graduates could normally expect repetitive tours in NATO; in fact, they would be selecting a specialized career in international assignments. Eventually attendance at a NATO school would be required prior to being designated for any responsible Alliance position.

Funds required to support the NATO Command and Staff College and Basic Schools would come from NATO sources. The cost for such an undertaking is relatively small. A recent NATO Defense College commandant delighted in telling visiting dignitaries that the annual cost of running the college approximated the cost of one medium U.S. tank.

Each college and school would have its own separate funds for administrative costs, including lecture fees, physical plant, and other requirements. The salaries of all students and permanent faculties would be paid by their respective governments. The total annual cost of running these five military colleges (based upon a yearly output of 1680 students) would be less than 5 percent of the *military portion* of the NATO budget. It is assumed that the bulk of initial costs—land, buildings, etc.—would be provided by host governments or by utilizing existing facilities on NATO installations.

As a longer-range program, there should be established entry-type military colleges where young men (ages 17–22) would receive international schooling patterned after such institutions as the Royal Military College, United States military academies, and the École Spéciale Militaire de Saint Cyr.

If we truly mean to strengthen our bonds of alliance, it would seem that a NATO university system would further this purpose and be in accordance with President Kennedy's concept:

> The future of the West lies in Atlantic partnership—a system of cooperation, interdependence, and harmony whose peoples can jointly meet their burdens and opportunities throughout the world. Some say this is only a dream, but I do not agree. A generation of achievement—the Marshall Plan, NATO, the Schuman Plan, and the Common Market urge us up the path to greater unity.[6]

Athens, Ohio

Notes

1. The initial course had only 10 countries represented: Belgium, Canada, Denmark, France, Italy, Netherlands, Norway, Portugal, United Kingdom, and United States. With the addition of Greece and Turkey (1952) and Germany (1955) to the Alliance, the college normally has 13 countries represented, with 10 different native tongues. Luxembourg has sent a member to two courses; Iceland has never been represented.

2. The committee was composed of an Italian army colonel, French air force colonel, English naval commander, Belgian army lieutenant colonel, Italian civilian, Turkish civilian, and Portuguese civilian.

3. Although this article is directed to a military educational system, I propose a comparable civilian schooling program, but that is the subject for another article.

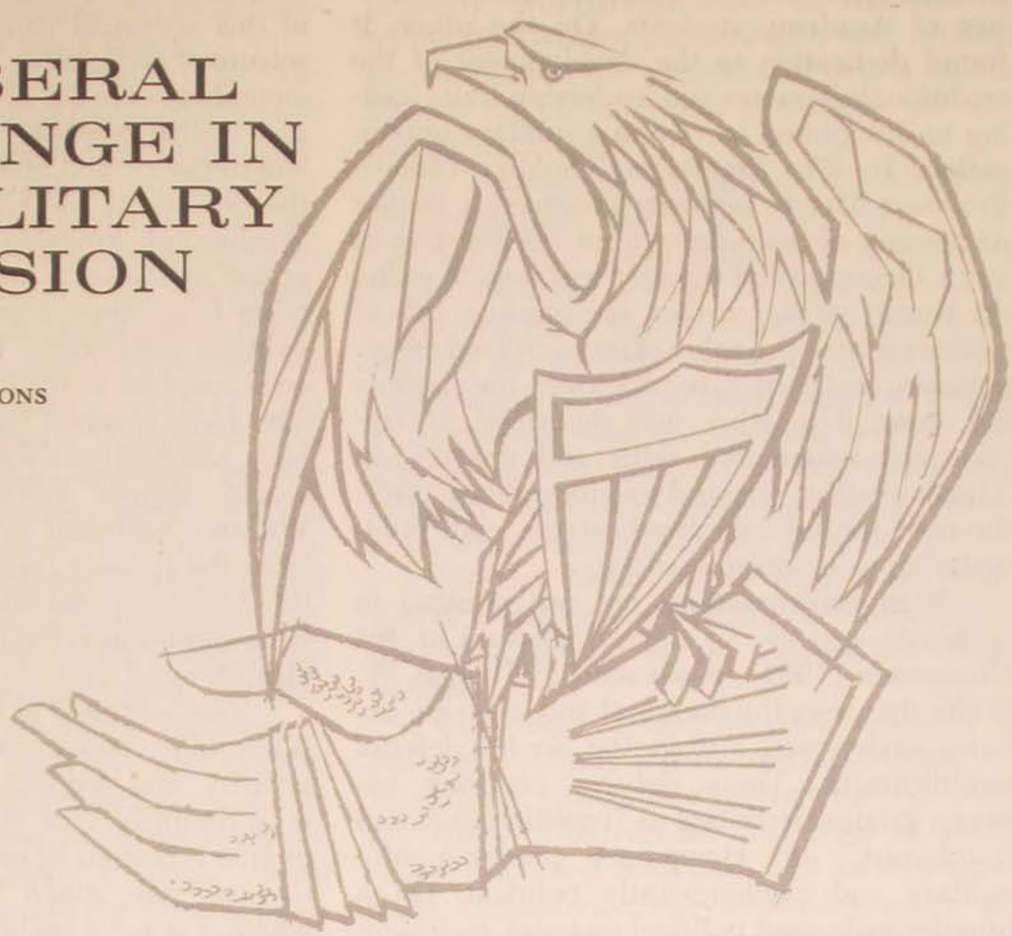
4. Closing paragraph in message from SACEUR to Standing Group. Records indicate no further action was taken on this proposal.

5. The language difficulties that will present problems in each of the schools can be reduced by several actions. First, preadmission tests should insure that students selected have a basic knowledge of either French or English, the official languages used at the NATO schools and in all other Alliance assignments. Second, intensive courses should be given in the two official languages during the school year; those students who have already mastered one language should be expected to become proficient in the second.

6. Address in the Assembly Hall at Frankfurt, Germany, 25 June 1963.

THE LIBERAL CHALLENGE IN THE MILITARY PROFESSION

MAJOR WILLIAM E. SIMONS



IN CERTAIN respects the military profession appears ill-suited to cope with the dynamic changes in the world political and technological environment. Its bureaucratic and hierarchical organization has often tended to reward parochial viewpoints and foster institutionalized routine. Its dependence on public support has sometimes served to discourage bold and timely changes in its internal policies. Its commitment to optimum security has made it resistant to innovations in defense concepts and to nonmilitary initiatives in strategy development. These apparent incompatibilities with an environment of change highlight a fundamental issue: Can the military profession, never before so influential in American society, adapt to the liberal values of that society and still retain its essential character?

Though the military traditionally has emphasized disciplined routine and conformity, it is today experiencing a vigorous dialectic. Within its ranks has emerged a liberalist element that challenges reliance on the established military maxims and seeks alternatives to the traditional approaches to defense issues. These spokesmen urge the encouragement of individual intellects and creative talents within the profession, in a constant search for better solutions to technical military and politico-military problems. As a result, the officer corps of the several services today embody two distinct and competing attitudes toward their responsibilities for national defense.

This dilemma of purpose has been revealed in many different ways. It showed up during the spring of 1965 in the concluding statement of the White Committee, which investigated the cheating scandal at the Air Force

Academy. On the one hand, the committee found desire for a spirit of free inquiry to excite the intellects and encourage the critical faculties of Academy students. On the other, it found dedication to the development of the traditional character and leadership traits leading to disciplined service in a military organization. In *The Professional Soldier* (1960), Professor Morris Janowitz observed a similar dichotomy of attitudes within the services at large. One school of thought was seen stressing the heroic martial virtues, the punitive role of military forces, the value of standardized career patterns, and "absolute" doctrines for employing arms. The other was described as emphasizing managerial skills and criteria, an adaptive policy-oriented role for military force, the need for individualized careers, and "pragmatic" approaches to warfare.

Such confrontations are not unusual in corporate groups. In *Soviet Strategy at the Crossroads* (1964), RAND scholar Thomas W. Wolfe discusses the doctrinal and strategic debates under way within the Soviet defense establishment. These debates continue between groups described as "traditionalist" and "modernist," or viewpoints predominantly military and predominantly political. On a broader scale most political societies, including the United States, have engaged for years in what Michael Howard has called a "dialectic between freedom and security." On one side of the dialectic are those who see great evil in hasty, "safe" action which may encroach on individual liberties, who believe that force must be used sparingly, and who regard a plurality of views as a source of progress and durability. On the other side are those who see "foreign" forces as the primary threat, who believe in generous applications of coercive power in combating these forces, and, who would subordinate all other motives to a singular will promising to maintain conditions of security.

To generations of Americans, the military has appeared to stand on only one side of this debate. And, until the last decade or so, leading members of the military profession have spoken and acted rather consistently in ways to confirm this view. Indeed, it is this fact as much as any other that has been responsible for the peculiarly American kind of concern for civilian control over the military. An objective review of this historical issue will reveal that actual seizure of civil power by the military (a fundamental concern for so many European peoples and British colonists) has never been a problem in the United States. Not since 1787, when the Society of the Cincinnati offered George Washington kingship and the support of an armed aristocracy, have American military officers ever again represented a threat to our political institutions. Moreover, it has become commonplace to observe that ex-career officers who have attained the nation's highest offices have carefully avoided uses of power that would appear authoritarian or dictatorial. Without historical evidence of a civil threat from the military, one is left to conclude that the American concern for civilian control has been conditioned largely by mistrust of military attitudes and mental processes.

The judgment of the military professionals is naturally constrained by concern for national security, and properly so. If this were not so, it is doubtful that they could perform their unique functions in modern society. Incidental to this issue, much has been written about whether or not a "military mind" actually exists. Proper perspective is supplied by Charles Burton Marshall in his observation that a military viewpoint is essential. As he states, the military profession has both the "prerogative and the obligation" to view reality with a distinctive set of attitudes.

A key to these attitudes is found in Janowitz's view that "the development of a rational approach to innovation cannot supplant an uncritical willingness to face danger—the essence of the martial spirit." Modes of service behavior are necessarily shaped to instill habits and attitudes that will best sustain reliable performance in battle. Especially hazardous or complex technical operations, such as the emergency dive of a submarine, require automatic response to signals or verbal commands, allowing almost no interpretation of the order. Individual desire to respond to impulse or follow an intuition must be subordinated to the course of action most beneficial for the entire crew or

unit. To sustain this essential combat point of view, officers are encouraged to regard organizational loyalty and obedience to proper authority as the highest military virtues.

Related to these requirements are the kinds of training and testing exercises in which military organizations continually engage. Considerable emphasis is placed on repetitive, routine drills which, though perhaps intellectually dulling, are nevertheless necessary for perfecting combat techniques and teamwork. Where men's lives are at stake, standardized practices, arrived at empirically under combat conditions, must be established. Thus, infantry platoons constantly engage in bayonet drill and typical field problems. Strategic bomber crews regularly fly practice navigation and bombing missions. In such exercises a paramount objective is to develop procedures that are as simplified and free of confusion as combat situations will permit. Quick reaction and disciplined routine are primary goals, and conformity with approved practice is encouraged.

Unilateral service doctrines also tend to constrain military attitudes. Branches of the military are unique among professional groups in that each has developed a rather formal body of rationale as a guide for its operations and policies. This doctrine provides fundamental concepts and criteria against which new ideas can be evaluated. However, doctrine can also act as a force for complacency and inflexibility. This is particularly true if it is regarded as providing adequate answers for every service-related controversy. Its value may be more apparent than real, its rhetoric more assuring than pertinent, as several instances will demonstrate:

(1) In early 1886, Alfred T. Mahan derived historically the concept that the proper use of naval resources lay in employing a battle fleet to seek out and destroy the warships of the enemy. Adherence to this doctrine by the Navy Department in 1916–17 was a primary factor in its near-failure to provide escort vessels for the convoy operations needed to combat German submarine warfare.

(2) In World War I, the High Command of the French Army stuck doggedly to the doctrinal principle of *offense à outrance,* which had been developed and taught in its war college following the Franco-Prussian war. Repeatedly ordered advances in the face of withering German machine-gun and artillery fire resulted in the slaughter of over a million French infantrymen and eventually led to a mutiny in the field.

(3) During the struggle of the Air Corps for recognition within the U.S. Army in the 1930's, strategic bombardment was emphasized to the detriment of other air missions, and the conviction grew that precision bombers could operate in daylight without fighter escort. Penetrations to deep German industrial targets, in accordance with this doctrine, brought such serious losses in October 1943 that the strategic offensive was halted until February of the next year, when escorts could be provided.

Military history offers many such examples of a service doctrine dogmatically applied despite changes in the conditions which spawned it.

Unilateral service doctrine tends to be self-perpetuating, and its treatment in the curriculums of professional military schools fosters the trend. This can be dangerous in an era when combined arms and joint service operations characterize conventional warfare and when whole nations can be destroyed in a few hours with nuclear weapons. Yet parochial concepts, developed when naval weapons were employed against navies and ground forces encountered only other ground forces, continue to hold sway. As a result, officers desiring to think about war realistically are often impaled on their own service's doctrinal horns.

Today's military professionals need influences to offset the effects of institutionalized routine and approved doctrine. The technical sophistication of weapons and the complexities of strategy require productive criticism and receptivity to new ideas. As in no other period of its history, the American military profession today faces responsibilities that demand officers with open minds, with a point of view reflective of liberal values.

Such a point of view is based on an awareness that methods, beliefs, and standards *first* learned—even in one's profession—are not necessarily the most appropriate ones. Thus the

liberally oriented officer is prepared to make fresh judgments, each one with full awareness of context, perspective, uniqueness, and the suitability of different criteria for objective evaluation.

• Awareness of *context* enables the liberal man to view events or issues in terms of the surrounding circumstances and the effects which they will have on these circumstances. As a result, any action he believes necessary will be taken with full awareness of probable consequences. For example, engineering decisions with regard to a transportation system cannot be divorced from costs or from impacts which the system might have on its users.

• *Perspective* enables the liberal man to see problems and events as products of their formative stages. He can analyze causal factors and understand why a problem exists. If successful, he is likely to develop fundamental and lasting solutions rather than those that cope only with surface or temporary aspects. For example, problems arising between factions in an organization cannot be solved effectively without attention to the forces that led to initial polarization of these groups.

• Being aware of *uniqueness* helps the liberally oriented person determine quickly whether or not the special features of a problem are crucial. If they are not, he can apply solutions known to have been successful in the past with a minimum of further deliberation. If they are, he knows where to devote his energies and what kinds of analysis are likely to be appropriate.

• The man who recognizes that *many different criteria* are suitable for evaluating different issues is the man best equipped to judge each issue or event on its merits. He is least likely to rely on doctrinaire rationale to meet a crisis. Being aware of a variety of possible approaches to a problem, he is likely to apply the kind of analysis and take measures most appropriate in each instance.

These four qualities of mind already characterize an increasingly significant number of our professional military officers. It is this group that represents the liberalist side of the current dialectic. Evolving amidst the traditional trappings and bureaucratic inertia of the profession, however, this group in its emergence has been upstaged by the more dramatic alterations in Department of Defense organization and management procedures. Actually the two developments are mutually supporting. On the one hand, the liberalist element within the military has helped provide much of the raw study data on which top management decisions have been based and has served as a primary source of talent for implementing the resulting innovations. On the other, among more liberally oriented officers the new managerial and policy-making procedures have encouraged fewer parochial concepts for employing military resources. Unfortunately, however, encouragement has not often been accompanied by recognition.

In point of fact, significant numbers of the officer corps are better prepared to cope with the technicalities and policy issues of modern defense than some of their critics have feared. In 1956, for example, Denis Brogan asserted that the higher civil servants in Britain's Admiralty and War Office were better equipped to deal with the new role of the scientist in defense matters than were "the military bureaucrats of the Pentagon." His explanation: "Oxford and Cambridge provided a better education for this function than did Annapolis or West Point." Since that time, however, many of the educational shortcomings of our service academies have been remedied. Opportunity has been provided to pursue academic areas of individual interest in greater depth, and the quality of instruction has been upgraded by higher faculty standards. Officer products of these institutions and of many civilian colleges are being sent by the thousands each year to the same graduate schools from which civil servants in the DOD, AID, and State Department are recruited. In addition to professional skills, these officers acquire the same kinds of expertise and academic background as many DOD civilians who hold high-level positions. Moreover, many of those who serve as faculty members at the service academies and staff colleges are able to effect the rare combination of practical military experience and extensive

theoretical contemplation which give rise to unusual insights.

This reservoir of military talent, combined with the kinds of intellectual influence most likely to encourage critical attitudes toward traditional service constraints, suggests a need for careful re-evaluation of typical approaches toward civil-military relations. Neither the American people nor their authorized officials can afford to regard the military profession strictly as an ultraconservative body whose views will threaten liberty itself if given too large a voice in national policy determination. To deal summarily with the military as one homogeneous group under a uniformly applied doctrine of civilian control is to ignore the very real differences in attitude and viewpoint which exist among members of that body and their potential for a broader, more constructive contribution to national affairs. The eventual effect will be to stifle the emergence of an effective leadership group within the profession and instead encourage narrow emphasis on techniques and total obsession with security that are so inimical to a truly liberal and vital society.

The military profession itself needs to take heed. The problems of fashioning an appropriate defense for the future are complex. To solve them demands a spirit of innovation, a knowledge of fundamental issues, and a rational objectivity far more extensive than in years past. Unless the services encourage and give recognition to their "liberals," the functions requiring these qualities of mind are likely to pass more and more into civilian hands. Witness the increasingly large roles played in recent years by contract study institutes and "defense intellectuals" in the shaping of military policy. If the military profession should encourage even more reliance on civilian consultants by failing to encourage similar study efforts and policy recommendations on the part of its liberalist element, both the profession and the vital balance in our national policy-making process could suffer.

Falls Church, Virginia

SPACE ACTIVITIES IN ARGENTINA

Teófilo M. Tabanera

President, National Commission on Space Research, Argentina

TOWARDS the end of the Forties, a group of technicians in Argentina became interested in rocketry and even went so far as to build motors of several hundred kilograms' thrust, using nitric acid and aniline.

At the same time a small group of engineers, among whom I was present, founded the Argentine Interplanetary Association, which became interested in all problems related to astronautics. With a membership of 500, a third of whom were university graduates and another third university students, this association all through the Fifties carried out an intensive program of publications, courses, and lectures.

Argentina was represented by the writer at the meeting held at the Sorbonne (Paris) in 1950, when the foundations of the International Astronautical Federation were laid. Since that time congresses have been held each year, and the Federation now has a membership of over 30 associations from different countries, among them the American Institute of Astronautics and Aeronautics in the United States.

However, until 1960, when the National Commission on Space Research was created by the Argentine government, there were in Argentina no organized and permanent space research activities to speak of. The National Commission started its activities towards the end of the year and prepared a national program, which has been in development for the last five years.

The National Commission on Space Research, or Comisión Nacional de Investigaciones Espaciales (CNIE), has been integrated with 25 members proposed by different national universities, the Atomic Energy Commission, the Antarctic Institute, the Meteorological Service, the National Council for Scientific and Technical Research, and several research institutes of the armed forces, among them the Institute for Aerospace Research.

The National Commission has formed several committees composed of 10 to 20 technicians or researchers active in different fields of space research in universities or institutes of Argentina. These are the Committees on Electronics, Space Technology, Physical Sciences, Biological Sciences, Political and Legal Sciences, Education and Information, and Applications.

The committees advise the commission on the plans and proposals for research and pass judgment on the tasks that each independent group is carrying out in the various disciplines.

So far, CNIE has promoted plans in the fields of aeronomy, ionospheric studies, cosmic radiation, and meteorology. At the same time it has furthered technological developments related to rocketry and electronics and supported theoretical studies in fields of interest to these activities.

Ground research and studies have been continued, as well as high- and low-altitude experiments with balloons and rockets. It is with this purpose that CNIE has promoted the creation of a rocket launching center and the Argentine Air Force has developed the Chamical launching facilities in the western part of the country at 30° latitude.

ground research

The ground research studies are briefly enumerated:

Cosmic Radiation Measurements, carried out from (1) three continuous observatories—Buenos Aires, Ushuaia, and Mina Aguilar, the latter operated by the University of Tucumán; (2) a neutron monitor on board the icebreaker *San Martín*—joint effort with the Argentine Antarctic Institute; and (3) a neutron monitor for nucleonic components—the Cosmic Radiation Laboratory of the Institute of Mathematics, Astronomy and Physics. The base will be described later.

Ionospheric Observations encompass several activities: (1) Vertical soundings, conducted at Buenos Aires, Trelew, Ushuaia, and Antarctica (Decepción) by the Naval Ionospheric Laboratory (LIARA), which also cooperated at the Chamical launchings with a vertical sounder of their construction; at Antarctica (General Belgrano Base); and at Tucumán, for the study of ionospheric variation in the equatorial and subequatorial region. (2) Satel-

lite observations of the Alouette from Trelew, Ushuaia, and Antarctica (Decepción) by the LIARA and of the S-66 from Ushuaia by the LIARA and at Tucumán Ionospheric Station (under agreement with CNIE). The object of this program is the study of variations in the ionospheric equatorial anomaly. (3) Very low frequency (VLF) studies by the Tucumán Ionospheric Station, which is working on the transequatorial propagation by means of measurements of phase and amplitude variations, jointly with the U.S. National Bureau of Standards and under agreement with CNIE.

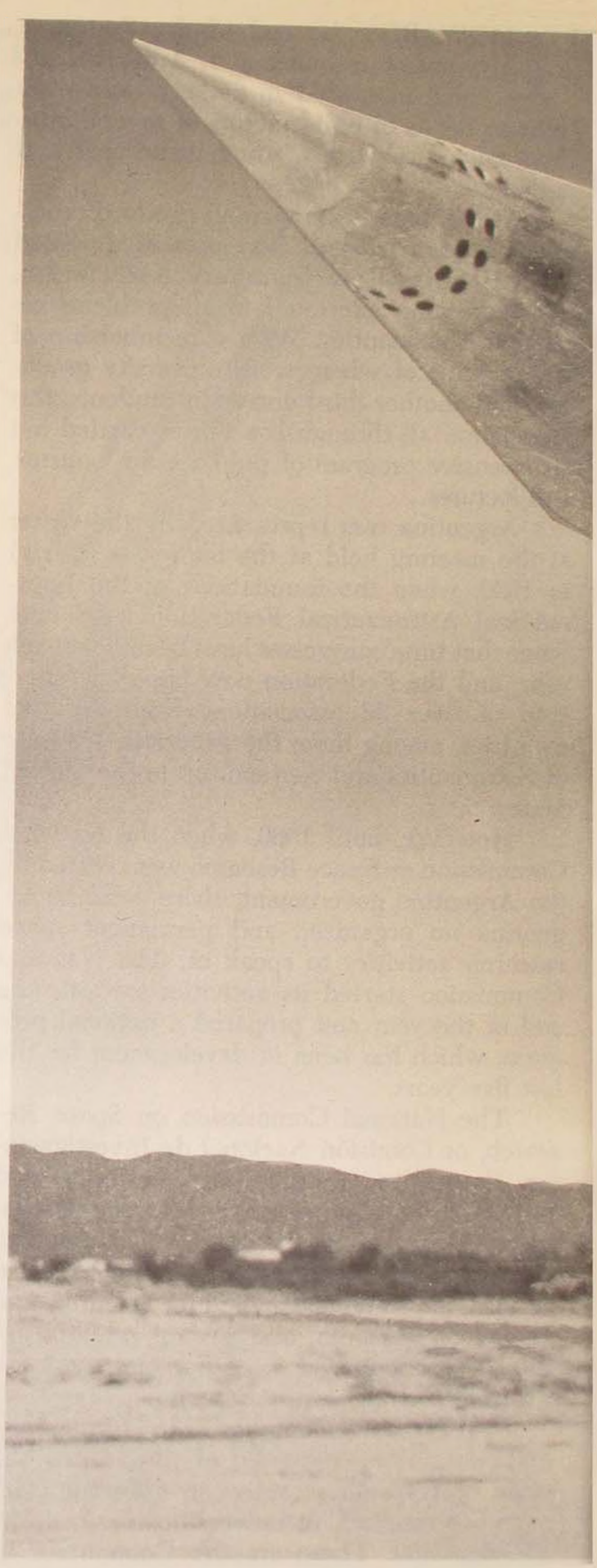
Auroral Observations, conducted by the Argentine Antarctic Institute during favorable periods from General Belgrano in Antarctica. This information will be used as a continuation of the synoptic study of auroral morphology within the International Year of the Quiet Sun (IQSY) programs.

Optical Tracking of Satellites, carried out from the Astrophysical Observing Station of Villa Dolores, Province of Córdoba, which is operated under an agreement between the Smithsonian Astrophysical Observatory and CNIE. The information obtained is used in studying characteristics of the earth magnetic field, atmospheric density, solar disturbances, and, in general, phenomena affecting satellites. Plans are under way to coordinate this station's activity with CNIE. The station cooperated in photographing sodium clouds from Chamical, situated some 240 kilometers northwest of the station.

Radio Astronomy. Installation is practically finished of the 30-m-diameter radio telescope of the Argentine Institute of Radio Astronomy at Pereyra Iraola, near Buenos Aires, which is to be engaged in galactic and solar research.

high-altitude measurements

High-altitude measurements have been carried out using rockets and balloons. A short description of them follows:



Nike-Cajun

Rocket Measurements. Rockets were used for (1) the study of winds and turbulence in the upper atmosphere by means of luminous trails—sodium cloud experiments; and (2) sounding of the lower ionospheric layers, in particular the sporadic E layer.

The sodium cloud experiments were started in 1962, with one series of launchings; they were continued in 1963 and 1964, with additional series of firings. They are part of a cooperative program agreed upon with the French National Centre on Space Studies, in which several nations take part. The rockets used are French Centaures, and the sodium trails ejected by them were photographed by K-24 cameras situated at varying distances from Chamical and by the Baker-Nunn camera at the Villa Dolores Satellite Tracking Station. Participating Argentine agencies in this program were the University of Cuyo (School of Engineering), University of Buenos Aires (School of Engineering), University of Tucumán (School of Sciences), and the Air Ministry.

The ionospheric experiments were carried out under a cooperative program between U.S. National Aeronautics and Space Administration and Argentine National Commission on Space Research. Two Nike-Cajun sounding rockets were fired in December 1964 from Chamical. The particular objective of the first launching was the measurement of electron density (CW method), ion density (ion probe), and electron temperature (electron probe). The objective of the second launching was the measurement of electron density and temperature and of integrated solar flux (UV probe). Useful data were obtained from both launchings. Participating institutions in this program have been the University of Tucumán (School of Sciences), University of Buenos Aires (School of Sciences), and different agencies of the

Telemetry receiver and equipment for tracking meteorological balloons and sounding rockets

Air Ministry. The payloads and equipment from the ground station were constructed and assembled by Argentine personnel at the Goddard Space Flight Center, Greenbelt, Maryland, with elements supplied by NASA.

Balloon Experiments. For the last few years the National Cosmic Radiation Center has been carrying out a program of systematic measurements of cosmic radiation. In 1964 twenty low-weight meteorological balloons were launched, fifteen from Buenos Aires and five from Chamical. This series includes the monthly simultaneous joint flights with the European SPARMO groups.

Moreover, the Cosmic Ray Group of the University of Tucumán has planned a program for the determination of precipitating electron density in the inner radiation belt. (The Buenos Aires group has also been working on this subject for several years.) Launchings have been carried out at Tucumán, Chamical, Buenos Aires, and Base Matienzo, Antarctica.

current plans

As a continuation of the aeronomy program initiated in 1962, launchings of Centaure sounding rockets for study of winds by means of the luminous-trails technique were programmed for 1965.

In another field, an agreement which has been reached with NASA for cooperation in an inter-American experimental meteorological sounding rocket research network (EXAMETNET) includes plans for launching boosted Darts and Arcas rockets from Chamical and eventually simultaneously from other sites in Argentina.

Launchings of sounding rockets for the study of cosmic radiation and ionospheric phenomena were also planned for 1965 and 1966.

national and international meetings

CNIE has organized several meetings, national, regional, or international, which have been instrumental in promoting interest in these scientific disciplines, not only in Argentina but in other South American countries as well. The Inter-American Committee on Space Research, which was created towards the end of 1960, has been playing an important role in this field. As a result of its activity, several national organizations for space research have been created in Latin American countries.

The first of such meetings on space research was held in Argentina in 1960 (the first of its kind in South America). It was attended by approximately 40 foreign scientists, particularly from the United States; among the latter were Dr. Hugh L. Dryden, Dr. Homer E. Newell, Dr. Martin Summerfield, Dr. Richard W. Porter, and many others. Approximately 40 papers were presented at the meeting, and they were later published by the Argentine Interplanetary Association in its monthly magazine.

Several national meetings which have taken place in the last few years considered specific subjects such as electronics and rocket technology. In these small meetings, attended by many Argentine technicians and scholars, local papers were presented and discussed; the meetings therefore provided an opportunity for the university groups to publish the work being done in space research. They will also further the interest of young Argentine scientists in these new disciplines.

Another regional meeting took place in Tucumán, in December 1963, on aeronomy. Organized by the National University of Tucumán jointly with CNIE, it was attended by scientists from Argentina and abroad. Among the visitors were scientists and engineers from Brazil, Peru, Chile, and Bolivia.

Later on, in July–August 1964, two important meetings took place. The Latin American School of Physics, held in Tucumán during the month of July, gathered together a number of Argentine and foreign scientists who delivered courses on the different branches of physics.

The Inter-American Symposium on Space Research, held in August 1964 in Buenos Aires, was the other meeting. It was attended by approximately 100 participants, 40 of whom were distinguished foreign scientists and technicians. The papers presented are being published by CNIE.

Finally, in May 1965, Argentina was the

site for the realization of the Eighth Plenary Meeting and Sixth Symposium on Space Research of COSPAR, the Committee on Space Research, created by the International Council of Scientific Unions.

Towards the end of May the Inter-American Committee held a meeting on the influence of the space age on engineering education. The sessions were held in the College of Engineering of the University of Buenos Aires and were a preliminary and preparatory step for a similar meeting which will take place in 1966 in Mexico.

Chamical Rocket Range

Soon after its creation and during the preparation of its working plans, CNIE considered the need for a launching site for scientific research rockets, taking especially into account the dire need for launching ranges of this type in the Southern Hemisphere. Detailed surveys of the matter determined the selection of Chamical, an Air Force base in the northwestern part of the country and inactive at that time, as the site for the future launching range.

The chosen location is geomagnetically interesting, since it is situated immediately under the southern subequatorial electrojet peak and in the vicinity of the ionospheric network of the 75° W meridian (latitude 30°20′ S, longitude 66°19′ W, altitude 1360 feet above sea level, geomagnetic latitude 18°52′ S, geomagnetic longitude 2°18′ E).

Physical Characteristics. The range is situated in a depressed zone between two groups or subsystems of ridges from the so-called Sierras Pampeanas, which reach a maximum height of 5000 feet to the west of Chamical. The western slope of the hills is rugged, while the eastern side is smooth and subjected to the consequences of mechanical erosion.

Chamical is situated in the arid subtropical zone (mean annual temperature 18°C). Rains are scarce (mean annual rainfall 300 mm), and the number of days per year with clear skies (that is, with cloudiness not more than 2/8) averages 130. On account of the irregularity and scarcity of rainfall, the classification of the zone varies between "very arid" and "arid." This explains the presence of a great many extensive salt flats.

launching facilities

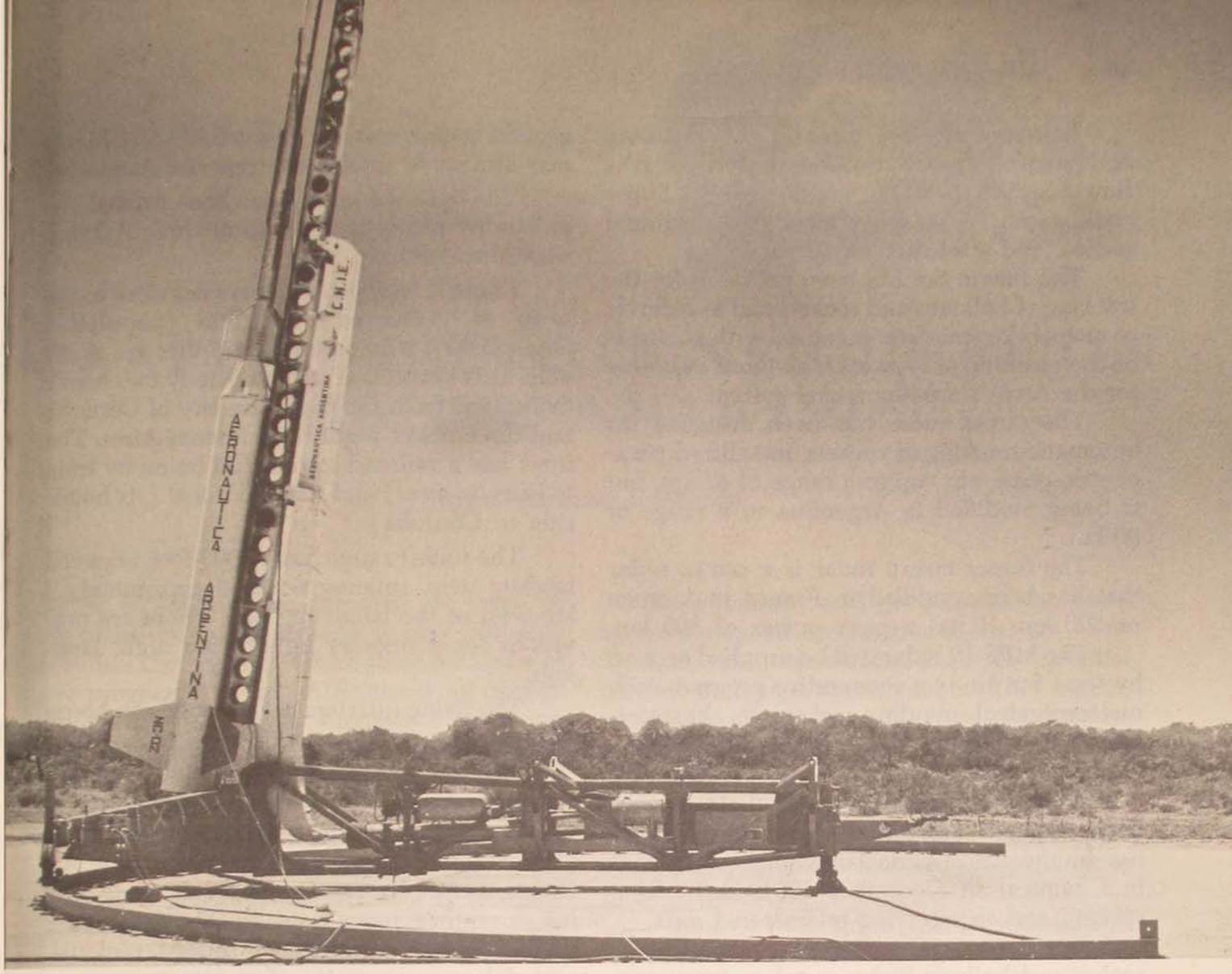
The launching complex takes up an area approximately 6500 feet by 650 feet. The longitudinal axis of this rectangular area points towards the impact zone, in a direction 75° east of north. In this area are the following main installations: the launching pad, blockhouse, final checkout building, tracking radar platforms, and tracking phototheodolite platforms. All the facilities have been planned to permit firings of sounding rockets capable of reaching up to about 200 km in altitude with a horizontal range of 150 km. (These limits are elastic, however, since the impact area could also accommodate rockets of somewhat greater horizontal range.)

The concrete-surfaced launching pad area is bordered on the southeast by a gas deflecting pit used with the Centaure mobile launcher. A Nike-Cajun launcher (of the semicircular azimuth rail type adapted from the Nike-Ajax guided missile launcher) is installed on the opposite side of the pad. Adequate lighting for night launchings has been provided.

The blockhouse and control center (45 feet by 22 feet) is situated some 250 feet from the launching pad and is built of reinforced concrete and protected with an external layer of dirt. The control and observation rooms are air-conditioned.

The final checkout building (2300 square feet) is composed of a workshop (32 feet by 29 feet) for final checkout of assembled rocket, three assembly workshops used also for checkout of payloads, and storerooms. It is equipped with the necessary electronic checkout equipment.

At a distance approximately 5000 feet from the launching platform, three areas have been selected for the installation of electronic tracking instrumentation. One of them serves to accommodate, when needed, a continuous-wave tracking system of the Doppler single-station type. The other two are intended for radars of the Super COTAL type or MPS-19 and/or tracking and telemetry equipment of



One of the two Nike-Cajuns launched from Chamical in 1964 as part of ionospheric experiments conducted through collaboration between NASA and CNIE

the Rawin Set AN/GMD-2 type,

The two phototheodolite platforms are 11-foot circular areas made of concrete. A third phototheodolite can be installed on the radar platform.

Other facilities include the assembly shop and workshop, weather station, powerhouse, and radio station.

A large converted hangar is used for the final assembly, general checkout, minor repairs, and storing of the vehicles before launching. A refrigerating chamber is available that can house rockets up to 30 feet long. A mechanics and electronics workshop has been set up there, which will be used only for minor repairs, since highly specialized facilities are just an hour away by plane from Chamical.

The weather station houses standard equipment for observations of the current conditions of weather at the surface and at altitudes to support the firings. It has its own radio transmitter and receiver for direct communication with the main offices of the Weather Bureau at Buenos Aires.

The base is equipped with different types of transmitting and receiving sets for short-range communication with observation posts used in the sodium cloud launchings and also for long-range communication with Córdoba and Buenos Aires.

Instrumentation. Among the tracking equipment assigned to Chamical there is a Rawin Set AN/GMD-2, a radar COTAL, a Super COTAL, an MPS-19, a continuous-wave ground station, and a telemetry station.

The Rawin Set has been provided for the tracking of balloons and rockets and as receiver of meteorological data. It is used with payloads of the radiosonde type such as those available for the Arcas sounding rocket system.

The COTAL radar has been designed for automatic tracking of rockets, metallized parachutes, chaff, etc., up to a range of 45 km, but is being modified in Argentina to a range of 90 km.

The Super COTAL radar is a COTAL radar that has been modified in France to a range of 300 km. It has a peak power of 800 km.

The MPS-19 radar will be supplied on loan by NASA for use in a cooperative program with meteorological sounding rockets. Its characteristics are similar to those of the Super COTAL radar.

The continuous-wave ground station has been built with the cooperation of NASA for use in the ionospheric launching carried out in Chamical in December 1964, in tracking rockets, and in receiving telemetered data.

For the measurement of parameters in rocket and balloon flights, a telemetry station has been envisaged, and it will be used jointly with a tracking radar. The continuous-wave ground station and the Rawin Set AN/GMD-2 may also serve as telemetry receiver stations.

The optical tracking has been carried out so far by means of a group of three Askania phototheodolites.

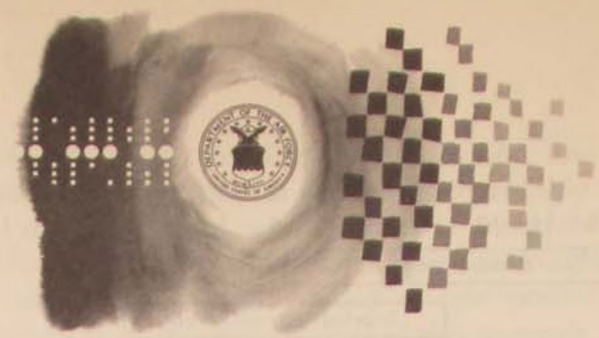
Logistic Support. The base lies close to the town of Gobernador Gordillo (population about 6000), where limited supplies are available. It is situated at approximately one hour's flying time from the industrial city of Córdoba and three hours' flight from Buenos Aires. The town has a railroad station (24 hours by train to Buenos Aires) and a bus terminal (six hours' ride to Córdoba).

The rocket range has a 6000-foot unpaved landing strip, running north, approximately 2 km west of the launching pad. There are provisions for temporary lighting for night landings.

The living quarters at the range can house at present up to 100 scientists and technicians, but this capacity could be expanded easily.

From the rocketry ventures of the Forties to the more sophisticated launchings at the Chamical rocket range of today, Argentine scientists, technicians, and engineers have steadily increased their space research. The developing CNIE, which has organized several regional, national, and international meetings on space topics, provides a stable foundation for Argentina's continuing advance in space activities.

Buenos Aires, Argentina



AN APPROACH TO CONFIGURATION CHANGE ANALYSIS

MAJOR WILLIAM F. MOORE

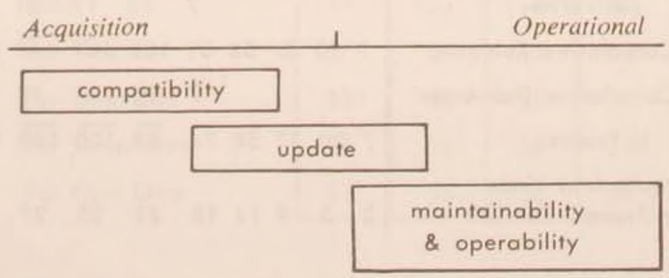
IN SYSTEMS management the area of hardware configuration change probably has the biggest perturbating influence of any program cost factor. Engineering change orders have a highly disruptive influence. Therefore, management attention has been focused more and more on schedule-cost-performance analysis of the change impact. Often, delays in decision further complicate the cost picture. The process of change order analysis is generally fragmented. A compatibility determination by the project/subsystem engineer, configuration control board finding, production effectivity plan, and funding requirements are seldom accomplished in concert. Part of the reason for this is that there is no commonly accepted methodology for welding these variable and usually functional areas into a cohesive whole.

The requirement for changing the configuration of system hardware can generate from many sources. Abnormally high failure rates, interface problems between subsystems-assemblies-components, exhaustion or limited availability of material, and inability to accomplish volume production are practical examples. Quite often there is a reluctance to bring problems of this nature promptly to the surface. As a result valuable time is lost, emergency decision is generated, and a quick (rather than long-term) fix is the outcome. It appears paradoxical that change orders fall into either of the two extremes—time-wasting indecision or panic "quick fix."

Both industry and government top management depend on functional analysis, coordination, and recommendation of essential hardware change requirements. They anticipate that experts in engineering, production, procurement, funding, and program management will resolve the problem and make the most cost-effective recommendation. Top management expects parallel coordinated effort but quite often receives independent or in-series activity.

Failure to recognize the inevitability of hardware configuration change is another area of shortcoming. On relatively long-life missile systems, the configuration changes fall into three classes: compatibility changes, updating changes, and changes relating to maintainability and operability. This change pattern, depicted in Figure 1, impacts primarily during the acquisition and operational phases of the life cycle. Of course the changes are not always readily separable into these classes on a time scale. For instance, compatibility engineering

Figure 1. Change pattern



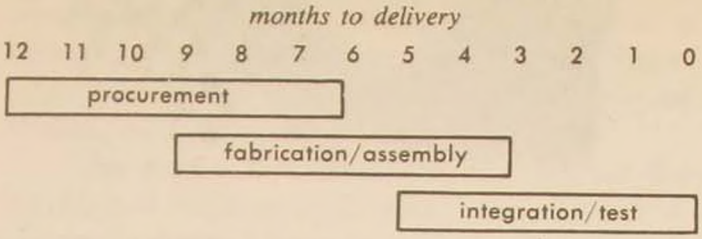


Figure 2. Production flow

changes occur during update programs, and operational deficiencies can accumulate to such an extent that a second-generation update or modernization program could be required during the operational phase. However, the changes can generally be expected to occur during the system life cycle as shown. Delayed program milestones and increased cost are usually the result of implementing configuration changes. Time-cost-performance trade-offs are made to optimize these key program factors. In today's systems competition environment, cost has become the dominant factor. What is required is a method of equating the primary function affected by the change, i.e., production, to the real world of funding restraint.

Analysis Methodology

Assume that a major subsystem is being produced at a modest rate but at high unit cost. A production flow chart is given in Figure 2, simplified by cumulating the various production functions into three broad categories—procurement, fabrication/assembly, and integration/test.

The most significant parts of the flow chart, for the purpose of this analysis, involve the fabrication/assembly and integration/test areas. This is primarily because the procurement of raw stock, vendor items, and subcontractor components is relatively more stable, free of changes, than in-plant manufacturing operations.

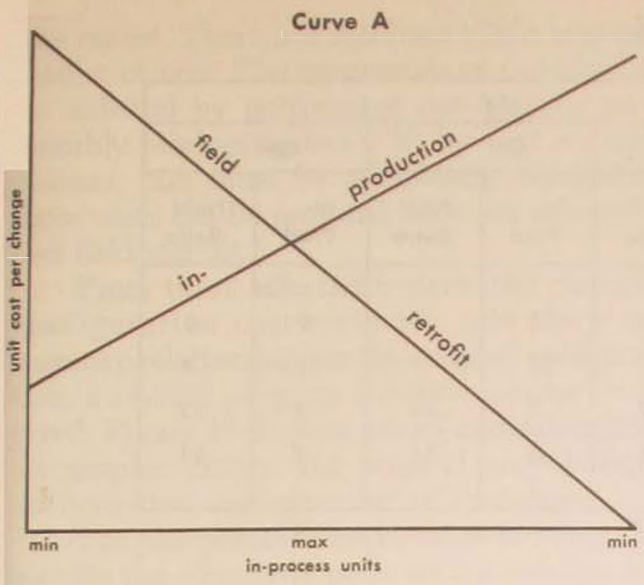
The first important calculation required for the methodology involves the equivalent units in-process during the entire production run. Figure 3 shows units in-process plant loading for five years of production. The twelve-month lead time has been compressed into four quarters for graphic clarity. Inspection shows peak plant loading occurs during the last three quarters of fiscal year *X* and during the first quarter of fiscal year *Y*. Therefore, if in-process hardware configuration changes are to be made, they should be planned for implementation prior to conclusion of the first quarter of fiscal year *X*. Obviously, earlier accomplishment would enhance the cost effectiveness of the change.

From the content of Figure 3, two general summation graphs can be made. Figure 4 shows the effect of cost and the ability to make a change in the production line versus field retrofit as a function of time (equivalent in-process unit flow).

For specific application, the curves are probably curvilinear. In the case of Curve *A*,

Figure 3. Equivalent units in-process

Fiscal Years	V				W				X				Y				Z			
Quarters	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Deliveries					7	13	17	21	23	27	29	30	36	36	36	36	27	15	9	3
Cumulative Releases	7	20	37	58	81	108	137	167	203	239	275	311	338	353	362	365	365	365	365	365
Cumulative Deliveries					7	20	37	58	81	108	137	167	203	239	275	311	338	353	362	365
In-Process	7	20	37	58	74	88	100	109	122	131	138	144	135	114	87	54	27	12	3	---
Equivalent Units In-Process Per Qtr	2	5	9	14	18	22	25	27	31	33	35	36	34	29	22	13	6	3	1	0



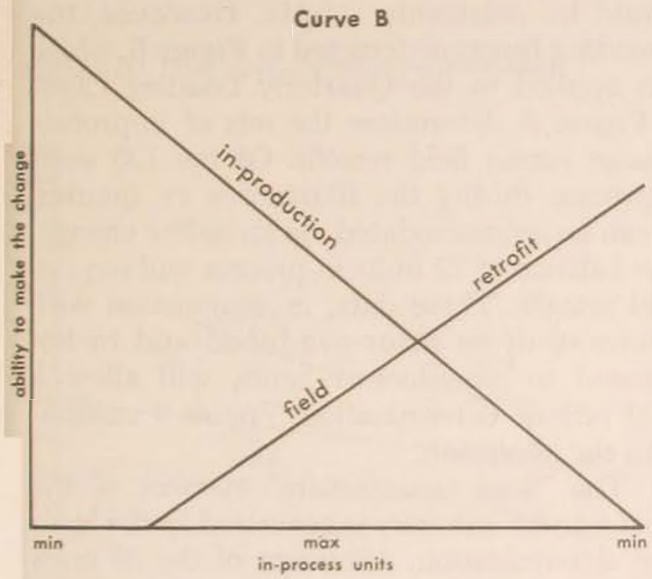


Figure 4. Configuration change factors

the curvilinearity would result from the difficulty in sequencing the change in the line as well as the impact of the units funneling into the change point (backlog cost). Curve *B* would probably show a gradual tailing off after the point of maximum equivalent units in-process is reached. In the case of field retrofit, the projections are also curvilinear, particularly for unit cost per change. Late in the acquisition phase of the system life cycle, field retrofit kit fabrication serves as a good production line balancing factor. Cost is reduced accordingly. Also, use of organic service labor to integrate the change gives an apparent savings, although it is mostly a question of out of one pocket versus another. For the purpose of this example, a linear trend for both factors will not unduly bias the results. From Curve *B* a general spreading function can be established. For a typical unit progressing through the production line, a chart similar to that depicted in Figure 5 will assist in making the decision as to in-process versus field retrofit change.

Figure 5. Spreading function change order effectivity

Production Qtr	*1*	*2*	*3*	*4*
In-process	100	75	20	5
Field retrofit		25	80	95

By accumulating these propensities for all units in-process at a given time, using the technique illustrated in Figure 3, one can determine the change impact. An abbreviated example is given in Figure 6.

By applying the spreading function shown in Figure 5 to the in-process units in Figure 6, one can make in-production or field retrofit determination. The calculations are shown in Figure 7.

Figure 6. Quarterly loading of in-process units

Fiscal Year	X	Y		
Quarter	4	1	2	3
In-Process Units	144	135	114	87
For One Qtr	36	27	15	9
For Two Qtrs	36	36	27	15
For Three Qtrs	36	36	36	27
For Four Qtrs	36	36	36	36

Figure 7. Spreading function applied to quarterly loading

Spreading Function Effectivity (From Figure 5)	FY X		FY Y					
	Qtr 4		Qtr 1		Qtr 2		Qtr 3	
	In-Prod	Field Retro	In-Prod	Field Retro	In-Prod	Field Retro	In-Prod	Field Retro
For One Qtr	36	0	27	0	15	0	9	0
For Two Qtrs	27	9	27	9	20	7	11	4
For Three Qtrs	7	29	7	29	7	29	5	22
For Four Qtrs	2	34	2	34	2	34	2	34
TOTAL			63	72				

The next step in the configuration change analysis procedure requires that cost factors be used in conjunction with the progress function (learning curve). First, cost factors should be established for the various phases of the system life cycle and then applied to an in-production or field retrofit change category. Figure 8 shows a typical cost factor relationship. Judgment is applied to this approach. By using the in-production change cost as unity, one can make direct extrapolation from the progress functions. Then the project engineer and manufacturing manager determine that the earliest time when release to manufacturing can occur is the first quarter of fiscal year Y. Production planning and budgeting will assist in determining the magnitude and cost of the change. Parts-affected count, revised production flow, material acquisition and scrappage, and revised standard hour data usually serve as the basis for initial projection of change cost. Later, this estimate is revised after a pilot run or accounting data are received on the initial release.

Figure 8. Cost factor by phase

	Acquisition	*Operational*
In-production	1.0	-
Field retrofit	1.5	2.0

If the change were 100% effective on the in-production units, the cost computation would be relatively simple. However, the spreading function depicted in Figure 5, which was applied to the Quarterly Loading Chart in Figure 6, determines the mix of in-process change versus field retrofit. Of the 135 units in-process during the illustrative FY quarter, 63 can be accommodated via an in-line change. The balance of 72 units in-process will require field retrofit. These data, in conjunction with information on prior-produced and to-be-released to manufacture units, will allow a total retrofit determination. Figure 9 summarizes the allocation.

The "final manufacture" element of the "field retrofit" category is generated by the lead-time determination. Allotment of the 36 units to field retrofit biases that category to a cer-

Figure 9. Allocation of units to change category

Total units		365
Field retrofit		
Previously delivered	167	
Final manufacture	36	
In-process	72	275
Balance		90
In-Production Change		
In-process	63	
To be released	27	90
Balance		—

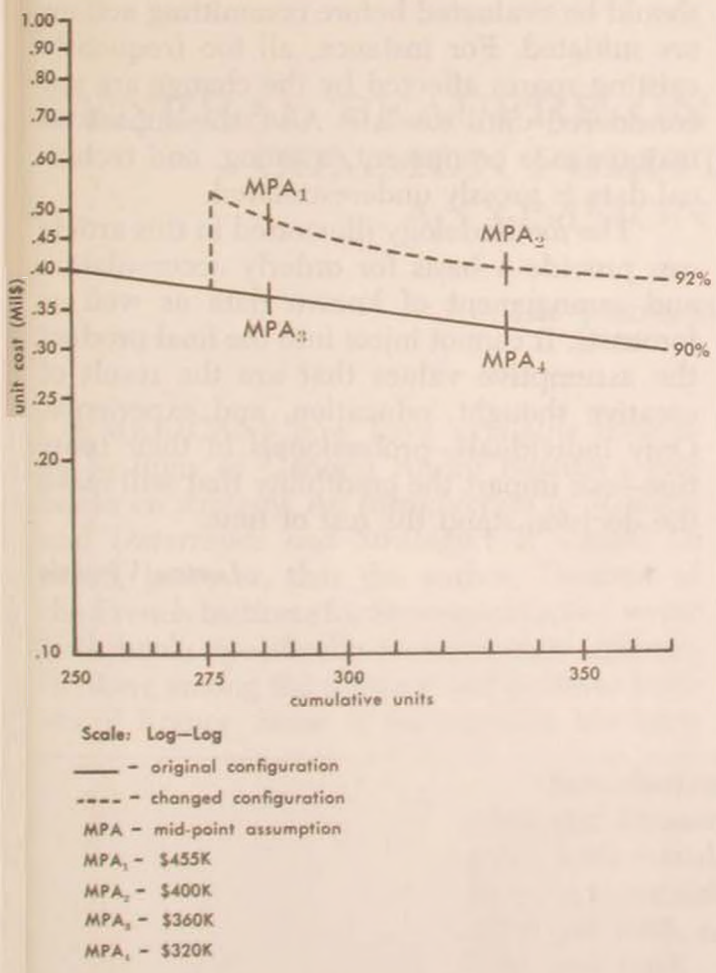
tain extent. There is a resulting slight overestimation of cost. The magnitude of the bias can be reduced by performing the analysis on a monthly production basis. If, for cost restraint reasons, bias must be completely eliminated, these units can be prorated between in-process and field retrofit.

From these effectivity data, the changed configuration cost estimate, and the cost-quantity relationship for the original configuration, a revised progress function can be structured. Figure 10 depicts, on an expanded scale for graphic clarity, the original and changed configuration cost-quantity relationships.

The plot points of importance in Figure 10 include the effectivity point of the change, the mid-point assumptions (MPA), and the slope of the two curves. First, the effectivity point is established at unit number 276. This is determined from the data shown in Figure 9. Second, the MPA's for the two curves are established. The changed configuration curve has two increments. The first reflects accelerated learning typical of the initial portion of a unit curve following unit number one. Since the initial quantity is 25, MPA_1 coincides with unit 288. The second increment depicts the mature portion of the curve. MPA_2 coincides with unit 333, halfway between unit 300 and unit 365. Use of the mid-point assumption for such a large quantity induces a certain bias; however, it is a generally accepted procedure for preliminary cost calculations. The bias can be substantially reduced at a later time by converting the unit curve to a cumulative average curve or by making multiple mid-point assumptions for smaller incremental quantities. Finally, the slope of the two curves deserves attention. The 90% curve of the original configuration should be stable and time-tested, following delivery of 167 units. However, the 92% changed configuration curve has many variables included. The magnitude of the change on unit 276 is manifest in the height of the vertical dashed line. The $130,000 estimate for incorporating the change in unit 276 is the product of inputs from many functional experts. Cost analysis, manufacturing, engineering, and purchasing—as a minimum—should provide expertise for the preliminary estimate. The slope of the curve in the example indicates a 2% increase in cost for doubled quantities relative to the original curve. This increase is attributable to a relatively short final production run (rapid tail-off of in-process units after maximum plant loading). Also, it could well be caused by the nature of the change. Increased complexity, redundancy, or changed components can all contribute to nonrecoverable cost growth on sophisticated hardware. Conversely, if the change were one of simplification, fewer man-hours expended, shorter test and integration time, or less costly materials, the curve would have a steeper slope.

Equating all the data accumulated is the final step in the configuration change analysis process. Figure 11, with its accompanying

Figure 10. Unit cost-quantity relationship



Quantity	Unit Numbers (inclusive)	Category	
		In-Process Change Cost	Field Retrofit Change Cost
65 1/	301-365	$5.2M	N/A
25 2/	276-300	$2.4M	N/A
72 3/	204-275	N/A	$11.5M
203 4/	1-203	N/A	$29.0M

Methodology

1/ Final in-process change: MPA_2 — MPA_1 = average cost/change
$400K — $320K = $80K
average cost/change × quantity = total change cost
$80K × 65 units = $5.2M

2/ Initial in-process change: MPA_1 — MPA_3 = average cost/change
$455K — $360K = $95K
average cost/change × quantity = total change cost
$95K × 25 = $2.4M

3/ Final field retrofit change (assume operational phase implementation): Field retrofit in-process units × (final in-process change cost × Figure 8 factor) = final field retrofit change cost
72 × ($80K × 2.0) = $11.5M

4/ Initial field retrofit change (assume acquisition phase implementation): (Final manufacture units + previously delivered units) × (initial in-process change cost × Figure 8 factor) = initial field retrofit change cost
(36 + 167) × ($95K × 1.5) = 203 × $143K = $29.0M

Figure 11. Cost analysis

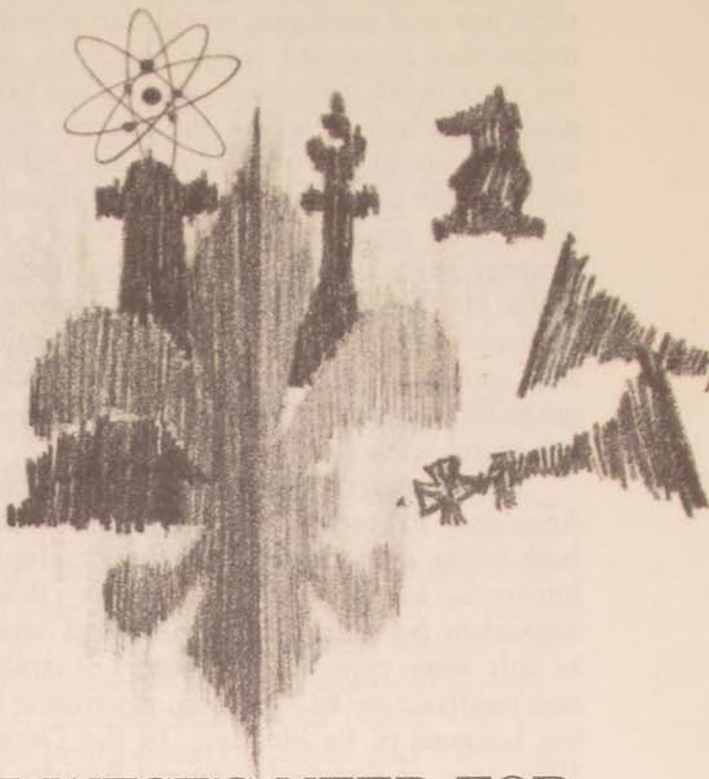
cost analysis "Methodology," depicts the cost detail procedure.

CONFIGURATION change analysis involves many complex variables. There is no single magic methodology. There is one key, however, without which success is highly improbable: an amalgamation of inputs from many functions is essential. Engineering, manufacturing, comptroller, purchasing, and sales in concert can provide the varied data and assumptions which are needed. Working in harmony, representatives from these agencies can insure that the most critical facets are considered. Each factor should be evaluated before committing actions are initiated. For instance, all too frequently existing spares affected by the change are not considered until too late. Also, the impact on maintenance equipment, training, and technical data is grossly underestimated.

The methodology illustrated in this article can provide a basis for orderly accumulation and arrangement of known data as well as forecasts. It cannot inject into the final product the assumptive values that are the result of creative thought, education, and experience. Only individuals—professionals in their function—can impart the credibility that will make the decision stand the test of time.

Lorton, Virginia

Military Opinion Abroad



GENERAL BEAUFRE ON THE WEST'S NEED FOR COMMON POLITICAL GOALS AND A COMMON STRATEGY

Dr. Joseph W. Annunziata

AMERICANS now have available translations of General André Beaufre's two books on strategy, *An Introduction to Strategy* and *Deterrence and Strategy*.† It should be noted, however, that the author, Director of the French Institute for Strategic Studies, wrote both books specifically to regenerate strategic thinking among the military and political leaders of France. Some of the research has been published in the Institute's review, *Stratégie*. General Beaufre is particularly impressed with British strategic thought and its chief formulator: The first book is prefaced by Basil H. Liddell Hart, and the second is dedicated "to Captain B. H. Liddell Hart who has contributed so greatly to the revival of strategy." Even the translations seem to be directed toward a British public rather than an American one.

†***Introduction à la stratégie*, Librairie Armand Colin, Paris, 1963, and *Dissuasion et stratégie*, Librairie Armand Colin, Paris, 1964, both translated from the French by Major-General R. H. Barry and published respectively by Faber and Faber in London, 1964 and 1965, and by Frederick A. Praeger, Inc., in New York, 1965 and 1966.**

In *An Introduction to Strategy,* General Beaufre discusses the purpose and types of strategy and introduces the problems of constructing a "total" strategy in view of the nuclear age and emerging world movements. His underlying argument is that the West has not yet developed concerted, long-range political goals in behalf of which the diverse forms of strategy could be effectively and efficiently utilized. He holds that uncertain political goals have been responsible for the West's erratic strategy in Indochina, Suez, Korea, Berlin, and Cuba. He then attempts to demonstrate in what instances direct (traditional military, nuclear) and indirect (diplomacy, cold war threats, guerrilla warfare) strategy might be used in achieving such long-range goals.

In the August 1965 issue of *Survival,* the American strategist Bernard Brodie reviewed both books and criticized the first one for being imprecise in its concepts (he saw Beaufre's distinction between "philosophy" and "strategy" as only some type of "philosophy of strategy") and unattractive to American pragmatic thinking because of its idealism. In the December 1965 issue of *Survival,* General Beaufre wrote a letter attributing Brodie's dissent to a semantic misunderstanding of the terms he had employed and to Brodie's instinctive reaction to a European method of exposition. Brodie replied by maintaining his original criticism, while admitting that British reviewer Michael Howard had received the book more favorably. Howard had reviewed *Introduction à la stratégie* in the May–June 1964 issue of *Survival;* although he considered it somewhat unclear in its distinctions between "politics" and "strategy," he thought it to be a masterful example of the French logic that distinguishes European studies on strategy from American ones.

In his letter, Beaufre made some interesting observations. He first explained the distinction he makes between *philosophie* and *stratégie.* By a nation's or hemisphere's "philosophy" he is referring to its outlook on life, its culture or tradition, which in the West is Greco-Latin and Christian, upon which it might base its political goals. By its "strategy" he is referring to all the *means*—diplomatic, cold war, military—which it might choose for the attainment of these specific, long-range goals. The semantic difficulty seems to arise from the fact that in English one does not usually refer to a nation's or hemisphere's "philosophy"; and since this can refer to a general theory, as in "a philosophy of history," Brodie unwittingly attributed Beaufre's concept to a Western "philosophy of strategy." Similarly, the French word *politique* can be applied both to long-range political goals (policy) and to practical means such as diplomacy or war; Howard interpreted *politique* in its practical sense and found it difficult to associate "politics" with strategy, since he supposed strategy to be merely military. But this is Beaufre's view: a long-range policy for the West (concerted political goals, based upon a common civilization) should precede implementation by the various types of strategy (diplomatic and military) at its disposal. It is evident that Beaufre places more emphasis on the psychological aspects of strategy, especially in its modern context as a *deterrent,* than on nuclear weapons themselves. (Basically, he is advocating that the military is only one means, and an extreme one at that, which civilian leaders have for coercing adversaries into allowing their nation to achieve its political goals.)

General Beaufre makes a more fundamental observation in his letter to *Survival*: it is his "logical" or "Cartesian" method of presentation that Brodie instinctively objects to most. Brodie and Beaufre had already exchanged their differences over the "logic" of Descartes and the "pragmatism" of William James. Beaufre admits that the method of presentation in his book is abstract, proceeding from general considerations to particular applications; but this is for the sake of clarity and logic. The fact that he has synthesized his findings into generalized categories does not mean that he has omitted an inductive investigation. He protests that forty years of wide experience and much diligent research went into the preparation of *An Introduction to Strategy;* but having lived for many years under the pure pragmatism (tactics) of Marshal Pétain (France's lack of political goals and a supporting strategy brought about her defeat in 1940), Beaufre believes that a nation must ponder the world situation

as a whole, establish goals in the light of that situation, and then proceed to formulate a strategy that will logically implement them. Beaufre is convinced that the synthetic method, although "typically French," is an indispensable way of bringing some rationality to the maze of strategic thinking in the world today. He contends that Brodie should be less intransigent when encountering a method of presentation which is different from his own, pointing out that many other strategists around the world, including Liddell Hart, have been more tolerant.

To an American pragmatist, Beaufre's particular brand of "logic" makes Brodie's attitude somewhat understandable. Beaufre gives to both *philosophie* and *stratégie* usages which are not commonly given to them even in France, where it is not customary to consider Western civilization as having a *philosophie* or a *stratégie* that is more than just military. More seriously, his concern for systematization has led him to compose simplified categories that seem to have few exact applications in reality. It is often desirable to reconstruct an orderly synthesis out of a maze of intricate phenomena; but the synthesizer risks mounting his arguments so that they seem to lead "logically" to a thesis which he has decided upon *a priori*. To a purely inductive analyst, it would appear that General Beaufre's "conclusions" are probably long-held opinions and are "objective" only in that they make logical sense to him. A purely pragmatic inquiry into the capability and possible consequences of strategic "means" which might serve national or international goals would have to reach tentative conclusions until the hypotheses or logical assumptions have been proven through experimentation.

In his Foreword to *Deterrence and Strategy*, General Beaufre admits that his synthesis is meant to give renewed confidence to the French, who are "confused between remorse for obsolete traditions, the illusion of disarmament, and 'abdication of responsibilities' to the United States." The General therefore aims to prove "objectively" that traditional strategy is not necessarily obsolete, that disarmament is an illusion, and that there is no need to abdicate France's responsibilities to the U.S. Moreover, his "objective" analysis of the direct and indirect strategies at France's disposal might convince the president of the French Republic that an independent *force de frappe* is a good idea but that there is a need also to supplement it with conventional forces, a national conscripted militia, and a continued "partnership" in a loose federation including Europe, the U.S., Britain, Canada, and even possibly Latin America and Russia. But once the pragmatist overcomes the transparency of Beaufre's "objectivity," he might still consider seriously his perceptions and proposals for France and for the West.

We have already noted Beaufre's observation that the Western democracies in modern times have failed to interpret world phenomena correctly, to establish clear-cut goals in the light of these phenomena, and to see what actions will be most effective in attaining their goals. These failures brought about France's defeats in 1940, in Indochina, and Algeria; the British struggles in Kenya, Cyprus, and Malaya; the Suez, Korean, and Berlin crises; and the American involvements in Cuba and Vietnam. Beaufre is thus adopting General de Gaulle's pattern of thinking since pre-World War II with regard to mechanized warfare, decolonization, and the nuclear age. Of course, De Gaulle's is only one interpretation of world phenomena in the light of which the West could set its goals and decide upon a strategy—and he may be wrong. However, Beaufre's suggestion for clear and long-range thinking does not seem untimely. The Western democracies might do well to complement their hitherto pragmatic approach with a more visionary one that considers ultimate goals and the most direct means of attaining them. This approach might avoid ineffective reactions to future events which may or may not have a significant bearing upon the attainment of these ultimate goals. The vital question, however, is whether the U.S. can ever concert its American Dream, New Frontier, and Great Society with the national aspirations of France, Great Britain, and the other Western allies.

BEAUFRE contends that the overriding aspect of strategy in the nuclear age is

not the *making* of war but the *deterrence* of war. His second book should really be entitled "The Strategy of Deterrence." It discusses in the main how to deter the clash of war so that it will not interfere with national or hemispheric objectives. The greatest deterrent, he proposes, is the *threat* of nuclear holocaust, which seems to be the answer for peace in modern times. For this reason, Beaufre is decidedly against nuclear disarmament, for with the "risk" gone nations might again be tempted to wage war with relative impunity. He estimates that a nation can begin to deter an enemy when it is capable of responding to an aggressive action by destroying at least 15 percent of the enemy's total resources (counter-city rather than counter-force); from this point on, the enemy might not consider the stake involved to be worth the risk, even if it is capable of destroying up to 90 percent of the other nation's resources. This mutual capacity to destroy a significant portion of the other's resources should produce a stalemate in which both parties openly admit that they are unwilling to risk losing 15 percent of their resources or more. To prevent such a stalemate from neutralizing the deterrent threat of nuclear war, Beaufre recognizes the additional importance of conventional and cold war strategies. Yet, conventional weapons alone do not deter war; rather, they encourage it because of the relatively little risk involved. They must be supplemented with tactical nuclear weapons, which will eliminate the merely conventional level and restore to the nuclear level the one great risk that discourages further war. Similarly, Beaufre opposes limited deterrent action, for it relieves the enemy of the fear of releasing a general nuclear holocaust; escalation must be mounted swiftly to the tactical nuclear level if the enemy is to be deterred by his risk. Cold war strategy, however, can do almost anything without danger; it can increase deterrent capabilities at the conventional, tactical, and strategic levels, and it can even neutralize a clear material superiority. Moreover, Beaufre believes that small, independent deterrent forces (as compared to those of the U.S. and the U.S.S.R.), if they are under the control of "responsible" nations like France, Great Britain, and one or two others, render more complex and effective the general threat of world holocaust, broaden alliances, and encourage cooperation among the nuclear powers.

The "laws" of effective deterrence, as General Beaufre sees them, lead him to make several strategic proposals for France and the Western democracies. The nuclear powers must be prepared for all forms of conflict: the highly probable, from cold war to limited conventional war; the probable, very limited or sublimited nuclear war; and the improbable, from violent local nuclear war to general "spasm" war. A strategy of nuclear deterrence requires complete preparation and flexibility for all possibilities: different kinds and levels of war, their geographical limits, their duration, and their engagement whether in the air, on water, or on land. Furthermore, in order best to prevent war, a strategy of deterrence in the nuclear age must establish a military system that is not only completely prepared and flexible but ultimately supported by universal conscription and a "national militia":

> . . . however technical and specialized armed forces may become, they must remain "national" in the wide sense of the word, in other words they must have their roots deep in the country and be closely bound to it. For this reason, alongside the technicians and the gladiators we now require the soldier-citizen concept produced by a militia. For all these reasons solid national military institutions must be maintained and preserved. (p. 136)

If these requirements for an effective strategy of deterrence are fulfilled, Beaufre proposes, then there will be numerous consequences that will help the fulfillment of political goals: stability, freedom of action, solidarity, a world concert of nuclear powers which will *control* (without disarmament) the spread of nuclear power to "irresponsible" nations. Nevertheless, while this strategy may produce some détente, it is not likely that there will be an immediate cessation of hostilities from China and other underdeveloped areas of the world. For this reason, "the Atlantic Alliance as a strategic entity will be basic to our security for a long time to come." (p. 141) In fact, Beaufre believes that Atlantic unity (eventually includ-

ing Latin America and the U.S.S.R.) should be one of the long-range political goals of the peoples of a common Greco-Latin and Christian civilization:

> This implies that on either side of the Atlantic (the Mediterranean of our shrunken world) peoples born of the same civilization should form a community. This is a worthy object and is no doubt one of the most likely possibilities in the very long run. (p. 154)

Aside from the pragmatist's understandable objection to General Beaufre's deductive method of presentation, one might still discuss his perceptions and proposals. Theoretically, it may be correct to say that the West has not agreed upon long-range political goals from 1940 to Vietnam. However, the West has made no real effort to formulate any, and it is not at all certain that the attempt will ever occur. There has been some agreement among the individual states as to the mutual interest each had in protecting itself from Communist expansion, but there are doubts that NATO could continue indefinitely if the common danger were eliminated. Furthermore, some experts in France, England, and the United States would probably disagree with Beaufre that the crises in Indochina, Algeria, Kenya, Cyprus, Malaya, Suez, Korea, Berlin, Cuba, and Vietnam were all inadequately handled because of a lack of perception, long-range political goals, and purposeful strategy. Even though De Gaulle has long had a political dream for France and revealed it in his demand for motorized armored forces between the two World Wars, was Marshal Pétain's shortsighted pragmatism the only reason for France's defeat in 1940?

The pragmatic approach seems to meet successive struggles with all the energy that can be immediately mustered, presuming that the pace of changing events in the modern world is too rapid for anyone to foresee more than five or ten years into the future. It is possible to recognize world phenomena when they are already real facts, such as mechanized warfare, decolonization, and the nuclear age, and then base political goals and strategy upon them. Polycentric Communism, overpopulated and underdeveloped countries, and newly emerging states have recently appeared as realities, and new political goals and strategy can now be formulated in view of them. However, the passing of expansionist Communism, the formation of a united Europe, and realization of an Atlantic Community are not yet realities (though the 6-nation Common Market is) to which one can adapt new political goals and strategy. Especially with regard to this last enumeration, De Gaulle's France and the other nations of "Western civilization" are probably more pragmatic than General Beaufre thinks they should be.

Beaufre's perception of deterrence as the overriding aspect of strategy in the nuclear age is a very interesting one and no doubt contains much truth. The threat of nuclear holocaust has greatly stabilized the world since 1945 and will probably do so for some time into the future. But Beaufre seems to be especially impressed, as are other Frenchmen, with the U.S.–U.S.S.R. showdown over Cuba in 1962: he uses it as a typical example of the risk to which an adversary might go before being deterred by the threat of all-out nuclear war. This typical example took place between two level-headed nuclear powers, however. Could threat alone deter a less rational nuclear power, like China, that might consider the stake involved to be worth the risk of losing 15 or even 50 or 60 percent of its resources? In actual fact, is the threat of nuclear holocaust alone enough to deter bellicose forces in small, nonnuclear countries in Southeast Asia, Latin America, and Africa? Beaufre would probably answer this last question by saying that guerrilla warfare should be deterred not by conventional weapons alone but by quick escalation to tactical nuclear weapons in order to instill quickly in the nonnuclear adversary a fear of the risk he is running. But this solution presumes that the adversary is rational and will immediately come to his senses and cease his hostile activity. Beaufre believes that the mere threat of irrational action will consistently bring an adversary to rational behavior; however, the smaller, nonnuclear forces may scorn the threat, continue their irrational risk, and eventually force the nuclear power to use nuclear weapons or to remain rational and not use them. Beaufre

characteristically sets great store by the effectiveness of psychology. Threat alone, he believes, is sufficient to deter war in the modern world and to maintain the peace, thereby reducing to a minimum the eventuality of ever having to carry out the threat. Similarly, he is convinced that the talk of power brings prestige even before it is warranted by the reality of possessing that power:

> Since the strategy of deterrence does not make actual use of its weapons, technical developments play a less decisive role than in a war strategy. The technical qualities of weapons are of course important, but their psychological and political impact is so overriding that it largely outweighs the technical aspect; thus the French strategic force exerted an influence well before it was actually in existence. The strategy of deterrence is therefore far more abstract and ambiguous than the strategy of war. (p. 171)

The pragmatic thinkers of "Western civilization" might not invest so much confidence in the psychological use of threat alone as a deterrent without the full capability of actually carrying out the threat. They interpret Theodore Roosevelt's "Speak softly and carry a big stick" to mean the big stick of capability in-being. History has shown that empty threats of power often are revealed to be mere bluff and eventually force the bluffer into disastrous action.

General Beaufre's proposals for a strategy of deterrence in the nuclear age follow closely the "logic" he sees in the possible situations of conflict throughout the world. Briefly, he recommends preparation for all forms of conflict from cold war psychology to "spasm" war, even though he feels that an effective strategy would make the more violent forms of nuclear war highly improbable. He also recommends complete preparation within the Army, Navy, and Air Force for all geographical and durational war situations in the nuclear age. However, these sweeping recommendations are ideal and theoretical; they do not take into consideration such details as feasibility, finances, organization, especially for a relatively small country like France. His recommendation for a national militia established under universal conscription is probably more interesting and valuable to practical strategists, although it appears to be a stand against having a nuclear *force de frappe* negate the necessity of continuing France's army traditions. Beaufre's assertion that the formation of small, independent nuclear forces by a few "responsible" nations will add to world stability, freedom of action, solidarity, and control of nuclear weapons is only partially convincing and seems especially intended to justify France's attempt to be recognized as a full-fledged member of an exclusive nuclear club. On the other hand Beaufre exhibits more practical wisdom when he counsels that worldwide nuclear control, not disarmament, is most desirable and that the nations of Western civilization must develop greater strategic solidarity if they are going to be secure and eventually realize their common political goals.

It appears, then, that General Beaufre is as staunch a believer in a Greco-Latin and Christian civilization as in a tradition of Cartesian logic inherited from medieval scholasticism. He seeks primarily to uncover how things *ought* to be when looked at "rationally," as for instance in his peroration:

> Without a long-term political aim, no present day decision can be rational. But if our strategy is based upon such an aim and if it is a vigilant strategy, we can rid ourselves of the attitude of passivity in face of events evidenced by the anxious question "What is going to happen?" and substitute for it the active creative question "What ought we to do?" (p. 174)

But it seems evident from various reactions in England and the United States, as well as in other Germanic and Anglo-Saxon countries, that "Western civilization" is no longer made up completely of Greco-Latin and Christian tradition, nor of medieval and Cartesian rationalism. The empirical and pragmatic process introduced in the West may seem in part wasteful to the more traditional-minded; but it has proven a prolific producer of novelty and variety, often merely through association or accident, which syllogistic idealism has had difficulty in rivaling. There may be much wasted effort in the empirical process, but at the same time energy is stimulated and experience is lived through that would otherwise

have remained unknown. The dynamic principle involving "waste" is a relatively new one in Western civilization and one which those still finding virtue in the traditional attitude of "conservation" find it difficult to accede to. The difference has been variously described as absolutism versus relativism, objectivity versus subjectivity, "rationality" (or reason) versus "irrationality" (or imagination), idealism versus realism. At any rate, the West's two methods of "logical" presentation, deductive and inductive, correspond to at least two opposite ways of gaining new knowledge. Despite the fact that Beaufre's opinions are based upon his experience and are well thought out, some Westerners no longer appreciate an investigation which seems to reach inevitably "conclusions" that are really preconceived opinions. Supporters of either approach, deductive or inductive, should not ignore Western civilization's evident diversity.

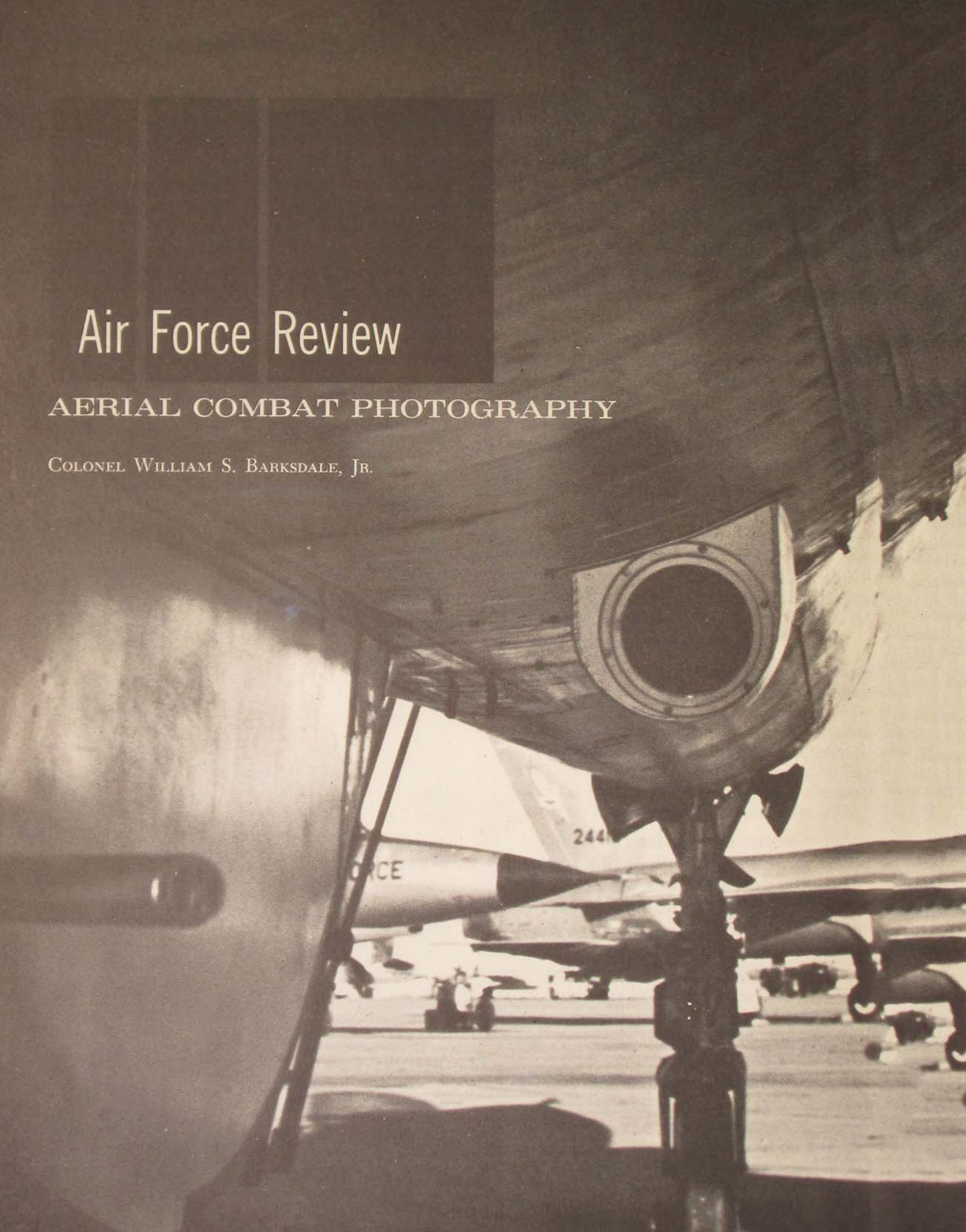
If there is ever to be a fulfillment of united political goals and a united strategy among those nations of the world sharing a common Western civilization, the parties will first have to realize that their common bond must be defined in broader terms than merely Greco-Latin, Christian, Cartesian, or even Atlantic and democratic. Yet this is precisely the problem which General Beaufre leaves for the Western world politicians to solve. His main intent, in both books, was to suggest that in this nuclear age *deterrence* of war through the maintenance of a constant threat of nuclear holocaust is the strategy best suited to allow the fulfillment of common political goals in the West.

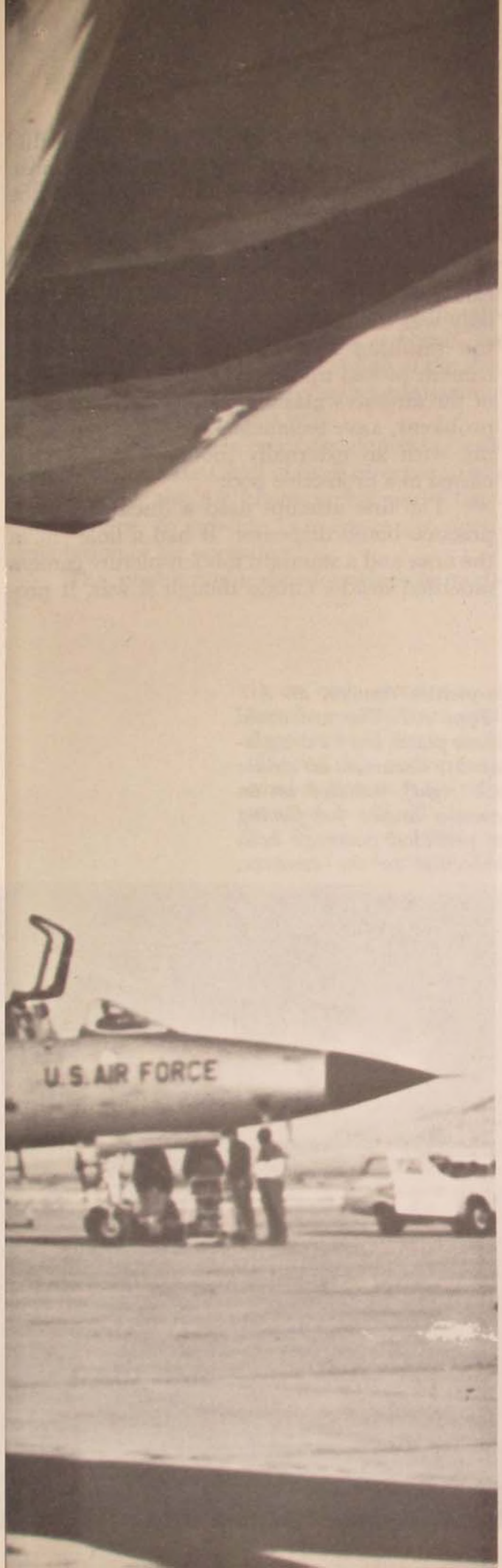
Aerospace Studies Institute

Air Force Review

AERIAL COMBAT PHOTOGRAPHY

Colonel William S. Barksdale, Jr.





AERIAL tactics for close ground support may be tested again and again during peacetime as exercise follows exercise, but the proof comes in combat. Only under wartime conditions against a real enemy and hostile fire can the Air Force finally establish the superiority of one technique over another. Similarly, all weapons used by the Air Force are tested many times. But once they are committed to a war, they may not behave as they did under the controlled, simulated combat conditions of an exercise.

What is the nature of their malfunctioning? To what degree do they fail to meet expected performance levels? Only in part can these questions be answered by the combat pilots. And for this kind of application, even telemetry has narrow limits. The best method is optical recording, through either television or photography.

Video has the advantage of enabling both instantaneous and repeated analysis; but the bulk of present equipment, particularly if color transmission and recording are necessary, renders a fighter-borne system impractical with present state-of-the-art equipment. A photographic system, however, is both possible and practical. While it does not allow for instantaneous evaluation, the photographic product can be enlarged many times for detailed inspection. It also permits examination of a split second of action and provides true, dependable color. Further, motion-picture instrumentation can be run backwards and forwards, a definite aid in optical analysis; it also offers a finished product that is viewable with equipment as simple as a magnifying glass, an important consideration in the field.

For 47 years the Air Force has attempted to use aerial motion-picture photography for combat documentation. During World War II and the Korean War, it was necessary to rely on 16-mm gun cameras for this purpose; the results were extremely useful but left much to be desired. By the mid-1950's the variety of weapons the Air Force was using even further reduced the gun camera's utility. Needed was a single flexible system that could photograph with clarity and detail the impact of a Bullpup several miles in front of the aircraft or the igni-

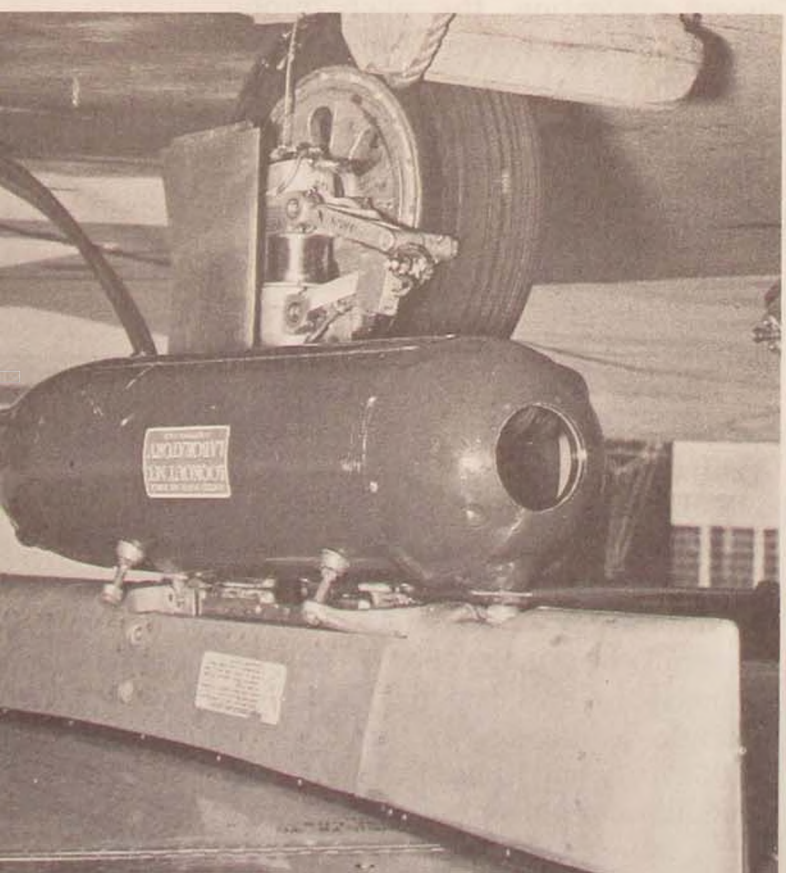
tion of bombs several hundred yards behind. Such a system is now in-being. Daily, Air Force pilots in Vietnam are documenting air strikes against the Viet Cong, producing film footage of air-to-ground action that is the best ever obtained.

The workable system grew out of equipment designed by the Aerospace Audio-Visual Service (AAVS) of Military Airlift Command (MAC) for another purpose—the production of training and orientation films. The two modes, combat documentation and production photography, employ completely different techniques, but certain requirements are common to both. For one thing, the pilot of an airplane is kept busy with just the routine of flying, so the photographic system must be an automatic part of that routine. For another, the photographic system cannot in any way affect the airworthiness of the aircraft carrying it. The system must be made compatible with the aircraft and not vice versa.

Until 1956 most air-to-air production photography was accomplished with hand-held cameras in the rear seats of T-33 aircraft. Not only was the field of view severely limited but the resulting film was not steady, and the camera picked up reflections from the interior of the aircraft's plastic canopy. To avoid these problems, AAVS technicians began experimenting with an externally mounted camera enclosed in a protective pod.

The first attempt used a discarded T-1A practice bomb dispenser. It had a hole cut in the nose and a standard motion-picture camera mounted inside. Crude though it was, it pro-

The first AAVS pod (left) carried only one motion-picture camera, an A-7 Eyemo, from which the pod took its designation of Type A-7. The pod could acquire production photography while mounted on a chase plane, but its straight-ahead sighting eliminated any possibility of its being used to document air strikes and weapons delivery. . . . The Type I camera rack (right), installed on an F-100, was the first attempt to provide proper camera angles for filming weapons delivery and air strikes. The two cameras provided coverage both fore and aft, but the open rack afforded no protection to the cameras.



vided the first air-to-air picture record of the in-flight activities of the Thunderbird century-series fighters.

The system was not suitable, however, for recording weapons delivery. The camera faced straight ahead and could not be angled to follow the ordnance; nor could it simultaneously record action behind the plane. When the aircraft pulled up after delivering a bomb, for instance, the camera lens was aimed at the sky. In addition, the pod imposed aerodynamic limitations on the aircraft.

When the Cuban crisis developed in October 1962, the USAF Chief of Staff directed AAVS's predecessor, the Air Photographic and Charting Service, to provide over-the-target documentation of air operations.

The photographic headquarters immediately placed motion-picture cameramen in the rear seat of some Tactical Air Command (TAC) aircraft and simultaneously asked the Aeronautical Systems Division (ASD), Air Force Systems Command, to construct six motion-picture camera racks modeled after a system being used on aircraft in Vietnam. Within 30 hours an ASD detachment based at Eglin AFB, Florida, had completed the racks, with both fore- and aft-facing cameras, and had sent them to McCoy AFB, Florida, where photographic technicians installed them on F-100 aircraft.

On 30 October, during a rocket and bomb mission over the Avon Park Bomb Range in Florida, the F-100 squadron tested the camera system. It worked well, and resulting photography was good. The following day, despite the malfunction of one camera, another test

In an early attempt to protect the cameras on the Type I rack, a modified napalm canister was used (left). This pod was used during TAC weapons test Exercise Full Scope in 1963. While successful when used on a chase plane, this pod, like earlier models, was not suited to strike photography. . . . AAVS combat cameramen (right) install a primitive pod, built in Vietnam, on the wing of an AT-28. An A-7 Eyemo camera was internally installed, while two P-1 70-mm sequential cameras were externally attached by means of an angle iron and web straps. This pod was built and first used in combat in 1962.

provided further confirmation of the system's capability.

On 6 November, the commander of TAC's 2d Air Division asked that a mount be installed on an RF-101. AAVS and ASD people made the modification at Eglin and two days later returned the aircraft to MacDill AFB, Florida, where test missions were flown on 8, 9, and 11 November. Only ten percent of the film exposed was accepted, but the first two tests proved the feasibility of the system. The third, because of an operating error, was considered inconclusive.

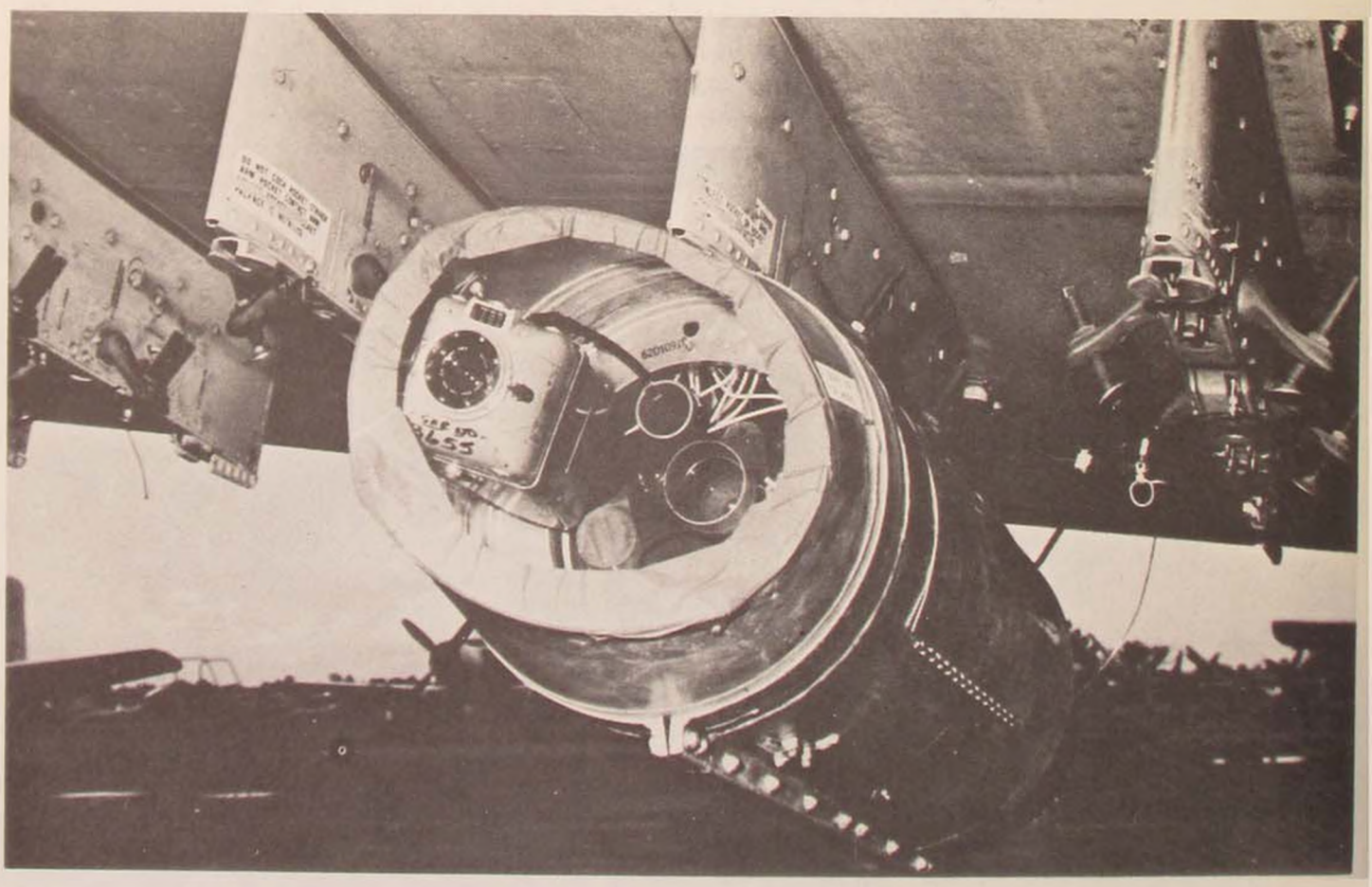
On 12 November, after viewing the test films, the TAC Commander, General W. C. Sweeney, ordered the cameras used on an actual mission over Cuba. A fueling mishap caused the aircraft to abort, however, and no over-target missions were flown with the system.

After the Cuban crisis, further modification began. The racks constructed during the crisis were simply that—racks exposing expensive cameras to the elements. An enclosure was mandatory.

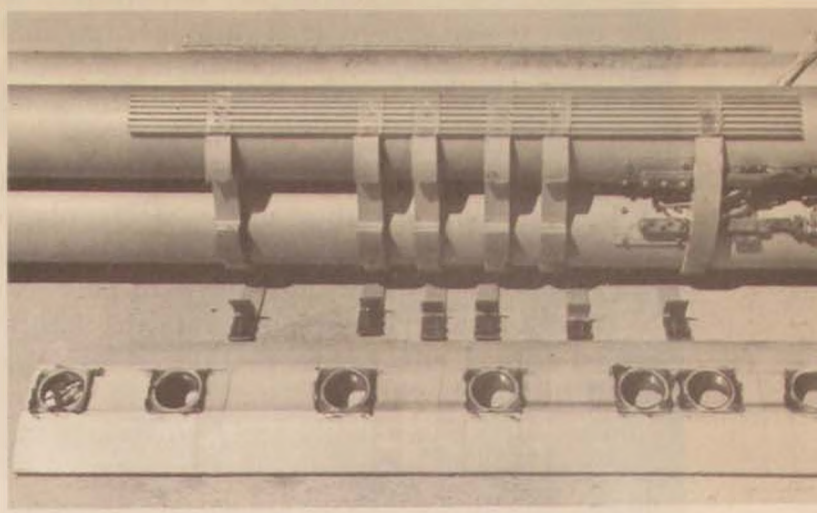
During Project Full Scope, a TAC test that followed close upon the Cuban crisis, the service used enclosures that protected the cameras and permitted some angular adjustment to match the type of ordnance being delivered. These were modified napalm tanks, and, although they worked, they did not allow sufficient camera depression. Aerodynamically, they also left a great deal to be desired, and further modifications were made.

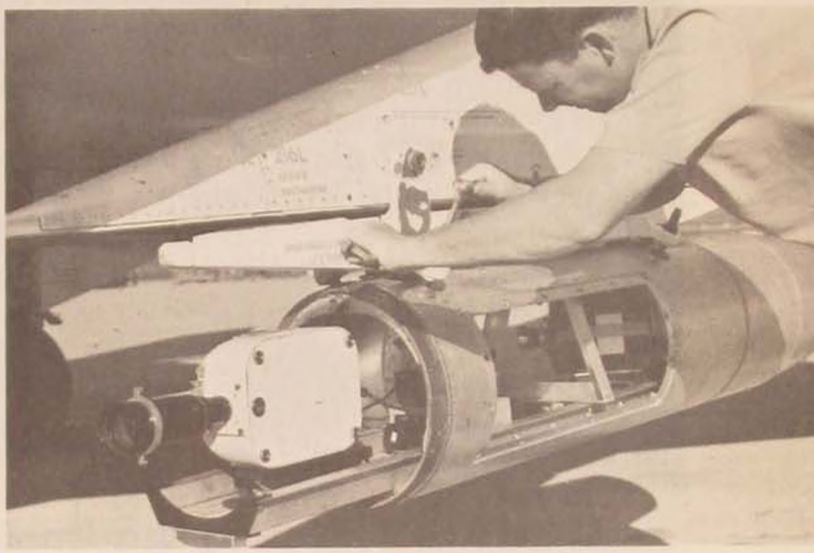
Photography from various TAC exercises and special tests at Nellis AFB, Nevada, throughout the rest of 1963 showed some improvement.

The second pod built in Vietnam had one major advance: both the motion-picture and 70-mm sequential still camera were internally mounted. The system had poor aerodynamic characteristics, however, and could be used only on the slow prop-driven fighters. The Plexiglas port had poor optical qualities.



An LAU-10 rocket launcher is transformed into a Type IV camera pod. The retaining ring for the rocket tubes is cut away (below). Tubes and strongback are withdrawn, and the strongback is retained. It is reinstalled for attaching pod to aircraft (top). A frame, which includes a track for mounting the camera, is fabricated and installed (middle). Nose cones are fabricated for front and rear of the tube. The pod is then attached to the aircraft in the same way as the LAU-10 (bottom).





The tests did provide further opportunity to measure the effectiveness of various lenses, film types, frame rates, and camera angles, but none of the approaches yielded consistently good results.

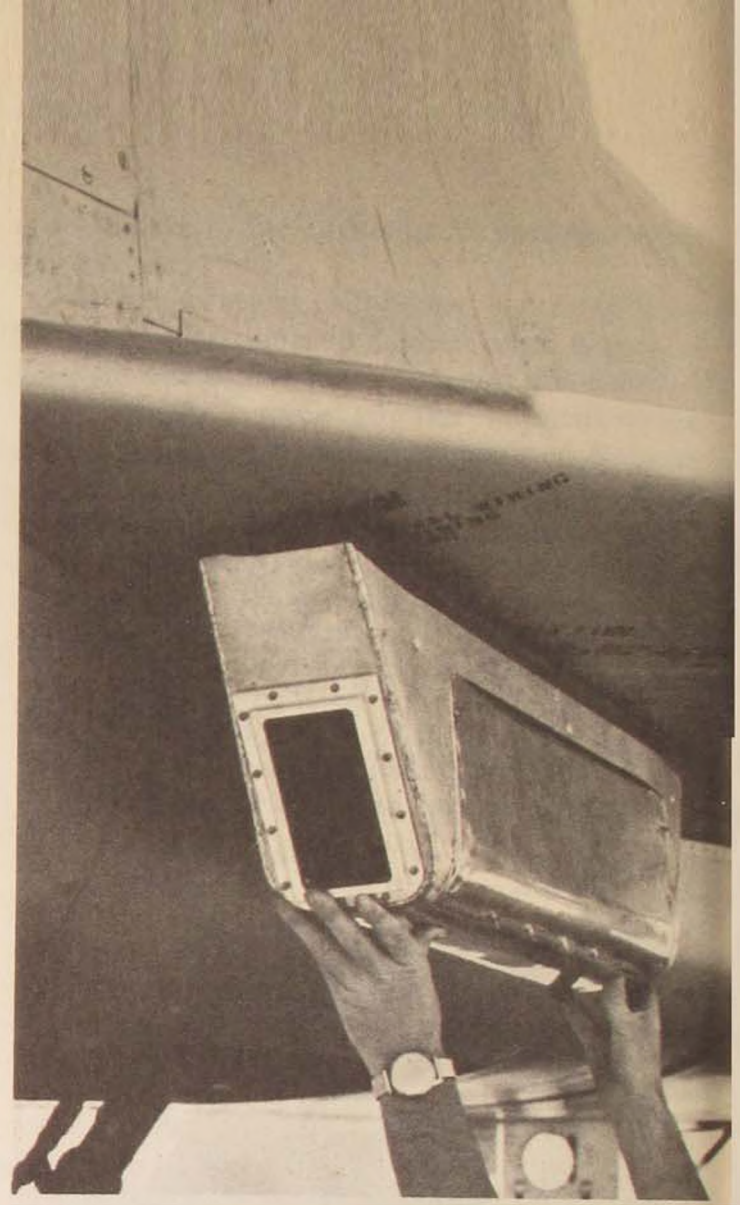
Meanwhile, throughout this entire period of developing and testing in the States, photo personnel in Vietnam were working toward the same ends. In late 1961 they had paid $35 to have a steel cylinder made, and to it they added optical safety glass ports both fore and aft. Equipped with a 35-mm motion-picture camera carried internally and two 70-mm still cameras carried externally, it was mounted on an AT-28 and used to obtain aerial strike photography for the DOD's 1962 report to the President.

By 1963, the Vietnam photo unit had built another pod. This enclosure had larger ports fore and aft and carried a 35-mm motion-picture camera and a 70-mm still camera internally.

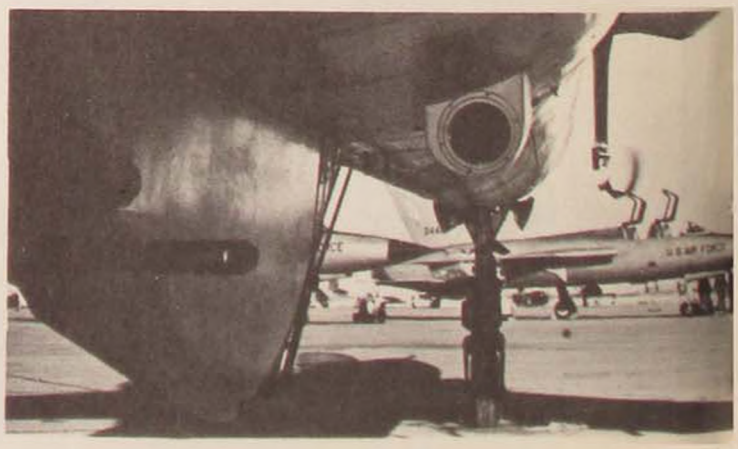
Eventually, out of the work done in both the ZI and Vietnam, there evolved an aerodynamically acceptable pod, constructed from an LAU-10 rocket launcher. This pod, designated the Type IV, enclosed two 16-mm cameras, one looking forward, the other aft.

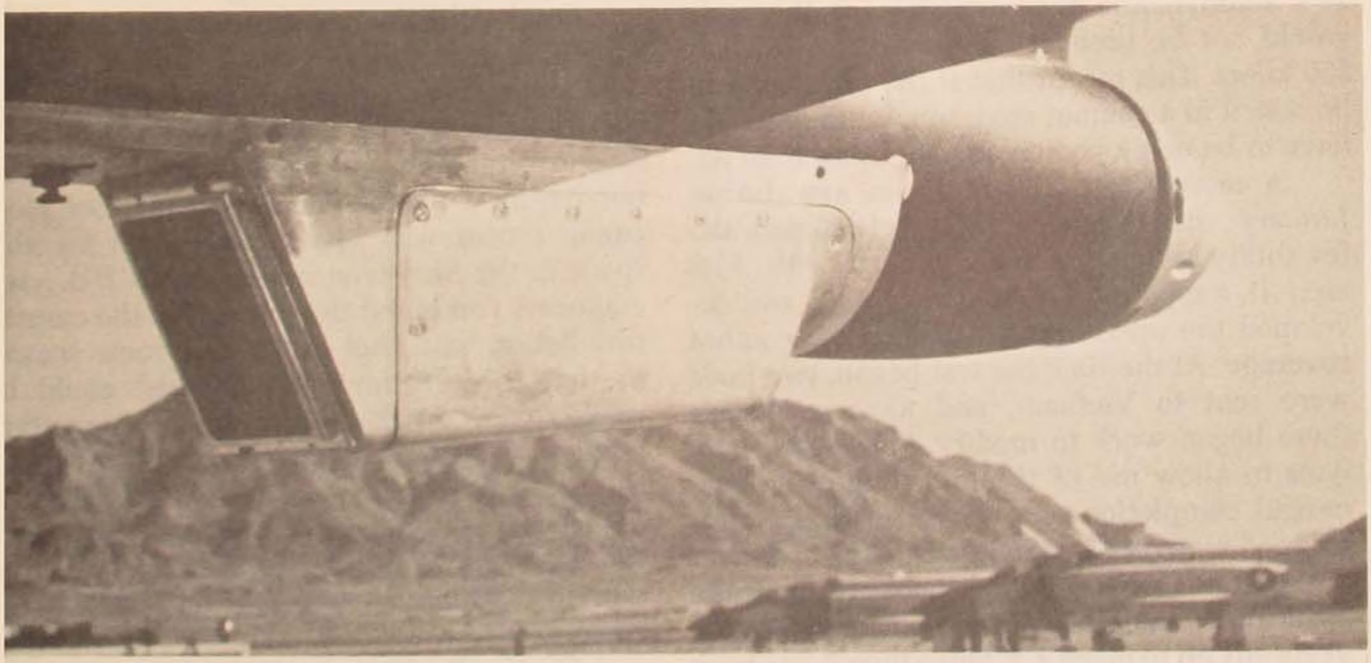
In November 1963, TAC Test 63-77 was established to evaluate the new pods on several TAC fighters. Initial tests of the Type IV pod aboard an F-100 began in January 1964 and were completed in eight days. The results were impressive, but additional trials aboard F-100 and F-105 aircraft were requested. As a result of these phases, AAVS made two additional major modifications. The Type IVA, like the basic pod, had windows fore and aft; windows were introduced on both sides to allow sidelooking photography. A further modification, designated Type IVB, added a bottom window.

In addition, AAVS tried out a closed-circuit television viewfinder. This system would be installed in the pod only when AAVS was shooting production footage and required accurately framed film. The viewfinder allowed the pilot or back-seat photographer, as the case might be, to see exactly what the camera saw and thus fly the aircraft to get the best possible picture.



AAVS and AFLC technicians working with people from ASD and TAC developed an internal camera system for the F-100, F-105, and F-4. All systems are attached to the fuselage except on the F-100, which has the station attached to the wing (above). The F-105 blister (below) requires aircraft modification for mounting. The node on the F-4 uses an existing receptacle with special cover attachments (right).





This system also proved feasible in preliminary testing.

Having completed the pod tests on the F-100 and F-105, the test team turned its attention to use of the pod on the F-104 and F4C aircraft. It also began establishing the types of cameras to be used, various focal lengths, camera speeds, and the depression angles required to meet varying altitudes, airspeeds, and ordnance types. When not testing the system itself, TAC used the pods to record tests of various types of weapons, and several hundred sorties were flown for this purpose alone.

By late 1964—in time for Gold Fire I—23 Type IV pods were available. Six went to McConnell AFB, Kansas, and Olathe Naval Air Station, Kansas, which were part of the Air Force Forces of Joint Task Force Sioux. The remainder went to AFFOR of JTF Ozark, which was responsible for testing the concepts under evaluation during the exercise. Camera pod photography began on 29 October and continued until the exercise ended on 11 November. Of the 30,000 feet of 16-mm color film exposed, evaluators accepted 90 percent as meeting data-collection requirements—a healthy improvement over the 10 percent factor achieved in early tests.

But still an obstacle remained. ASD had not yet completed exhaustive testing of the Type IV's aerodynamic characteristics, so the pods would not be used at airspeeds greater than 550 knots. This meant that if the pods were to be tested in a combat environment they would have to be employed on aircraft other than jet.

A month-long trial at Eglin AFB during January and February 1965 determined the feasibility of mating the Type IV with A1E aircraft, a type used in Southeast Asia, and developed the operating parameters for combat coverage. At the time the test began, two pods were sent to Vietnam, and AAVS specialists there began work to modify A1E wiring systems to allow use of the pod. Following successful completion of the test at Eglin, AAVS shipped more pods to Southeast Asia, and combat aircraft began carrying them. At about the same time, ASD cleared the pod for operation at speeds up to mach 1.2. Since then it has been flown in combat on several fighter types.

Although the pods are performing exceptionally well, combat requirements have highlighted several drawbacks that were recognized when the first pod was put on an aircraft. The pod occupies an external store station that would otherwise be used for carrying ordnance. Since the pod is carried on the return leg of the mission, when the aircraft would normally be aerodynamically clean, its drag causes increased fuel consumption. Also, if hit by ground fire or attacked by enemy fighters, the pilot must often jettison all external stores, including the pod and its precious film.

To eliminate some of these difficulties, AAVS designed and Air Force Logistics Command (AFLC) engineered an internal motion-picture camera system for the F-100, F-105, and F-4. It uses a 16-mm gun camera looking forward and slightly downward and a 16-mm high-speed instrumentation camera looking aft and down. Both cameras have been equipped with variable focal length lenses, and a larger magazine was added to the gun camera. Depending on the space available and the geometry of the particular aircraft, the cameras have been either wholly or partly submerged in the aircraft fuselage, or else mounted beneath the wing. In each position the camera protrusion has been covered by a smoothly faired blister to reduce aerodynamic drag.

On the F-4 the modification was relatively simple. A small radome, on the bottom aft section of the main nose radome, had been designed to house—for Navy use—an electronic sensor. While this particular type of sensor was not required by the Air Force, another electronic sensor was being engineered for this space in the Air Force version of the F-4. AFLC engineers combined the wiring for the camera installation with that of the electronic sensor, so that the electronic "black box" could be easily removed prior to a combat documentary mission and the camera package slipped into the small radome. AAVS and AFLC technicians developed a cylindrical camera housing to fit the space available in the radome, together with the necessary forward- and aft-looking camera windows.

On the F-105 the only available fuselage location that would provide a clear forward

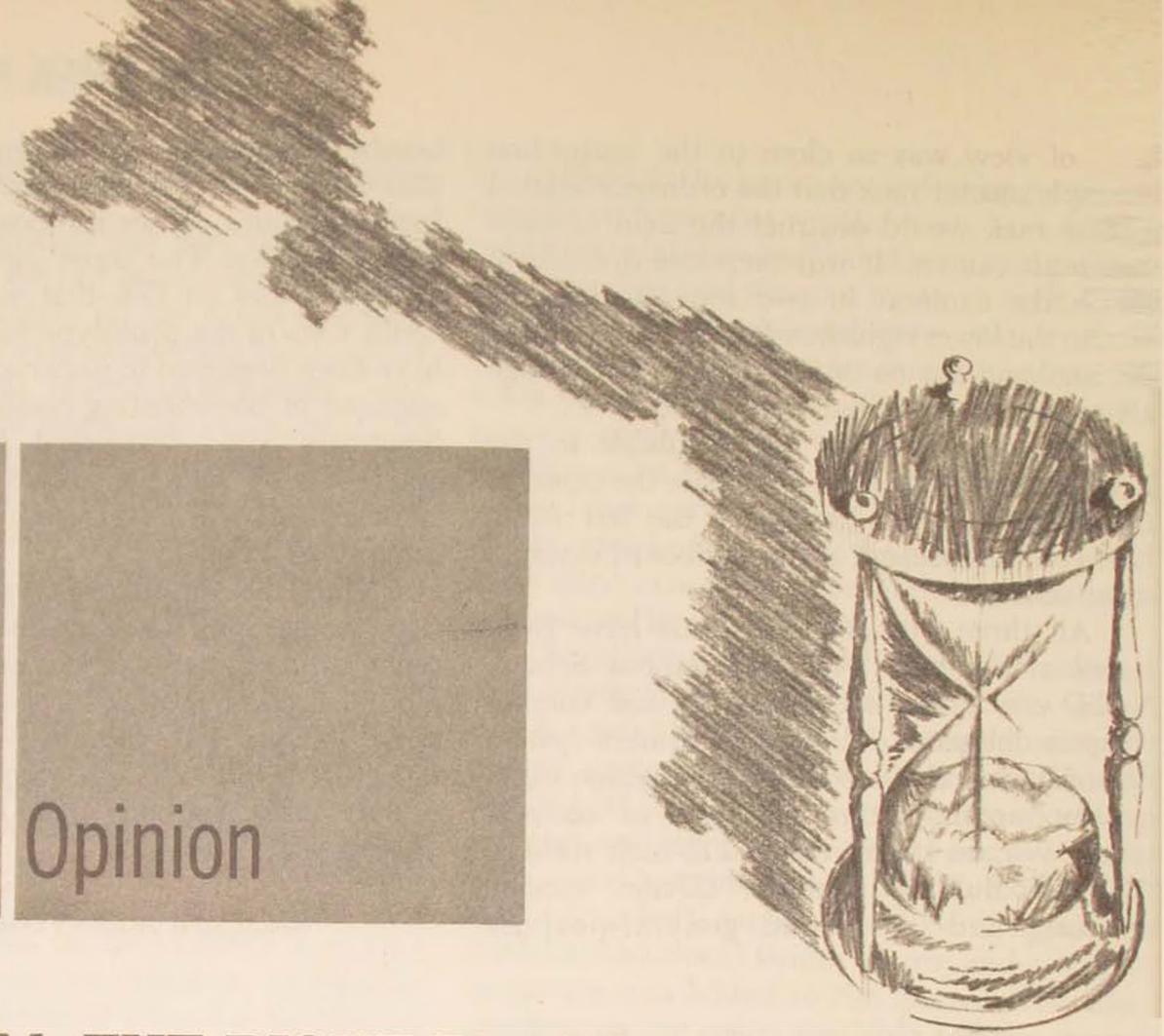
field of view was so close to the center-line multiple ejector rack that the ordnance loaded on the rack would obstruct the field of view of the aft camera. It was therefore decided to house the cameras in two separate blisters, one on the lower right-hand part of the forward fuselage and one on the bottom of the fuselage aft section, just behind the tail hook.

No internal space was available in the F-100, so it was necessary to locate the cameras in a blister on the bottom of the left wing, between the fuselage and the inboard external store station.

All three blister installations have been tested at the USAF Fighter Weapons School, Nellis AFB, using live ordnance and combat weapon deliveries. The blister camera system demonstrated the capability to produce high-quality motion-picture coverage of conventional weapon strikes using 2.75-inch rockets, AGM-12 Bullpup missiles, 20-mm cannon strafing, and 750-pound general-purpose bombs. The camera system imposes no restriction on the carriage of external ordnance or fuel stores and causes no measurable aerodynamic penalty. The three aircraft—an F-100, an F-105, and an F-4—that were used in the Nellis tests of the prototype blister installation have been deployed to PACAF and are currently engaged in documenting combat operations in Southeast Asia. Additional F-100's, F-105's, and F-4's are being modified to carry blister cameras and will be in use in SEA during the summer of 1966.

Thus, motion-picture combat documentation photography has progressed from the relatively crude systems of the mid-Fifties to the modification of substantial numbers of tactical strike fighters with camera systems especially designed to provide a photographic record of exactly what happens over real targets and against real opposition.

Aerospace Audio-Visual Service (MAC)



In My Opinion

VIETNAM—THE RIGHT PLACE *AND* THE RIGHT TIME

LIEUTENANT COLONEL DONALD R. CURRIER

NEVER before in American history has a military action been the subject of so much controversy as the current war in Vietnam. Numerically, the antiwar groups in the United States are a small but vocal minority whose words and actions have been magnified all out of proportion by excessive press coverage. At the same time, however, the United States is receiving, with the exception of 39 other nations, practically no concrete help and in some cases little sympathy from our friends and allies around the world for our position in Vietnam. What is wrong? Are we indeed making a colossal blunder in foreign affairs, or are we failing in some crucial way to make clear the rationale for our being there?

Those who oppose our presence in Vietnam fall into three general categories according to the nature of their arguments. The first and least complicated group is composed of the true pacifists. They believe that killing in any form is wrong and that organized killing for political reasons is especially reprehensible. The pacifist position is not new. They have been consistent in their opposition to all wars and, in addition, have managed to keep themselves free of ideological bias. For this they deserve respect if not agreement.

The second faction among the "antis" might be called the legalists. Starting from the premise that the Diem regime initially abrogated the free election provisions of the Geneva Agreements, the legalists claim that the war is actually a civil war in South Vietnam. Consequently, they argue that we are violating the principle of nonintervention of the United Nations. The Viet Cong, according to them, represent the true feelings of the South Viet-

namese people who support the Geneva Agreements. They maintain that the government of South Vietnam opposes the people's desires and is fighting against unification by election because they know they would lose. The legalists scoff at the current Saigon government, claiming it is a dictatorship with no legal basis for existing. They refuse to accept the President's statement that we are honoring a long-term commitment to South Vietnam because, they say, the government to which the commitment was made has long since vanished. They cap their arguments with the claim that the President is exceeding his authority by involving Americans in Vietnam without a declaration of war by Congress.

It is interesting to note that the position of the legalists is almost identical to that of the Communists, who always seek to cover their actions with the cloak of legalism. Unfortunately, for the thousands of butchered South Vietnamese, the legalists appear to be so concerned with the motives of the victims that they ignore the legality of the means and the morality of the ends of the Communist aggressors.

The third faction of the "antis" comprises certain political strategists without portfolio. Characterized by high levels of intellectual attainments in just about every art or science except the intricacies of foreign policy, they appear to hold a different view of history than most people. For some strange reason, they view the advances of Communism in Asia with little concern. They appear to believe that it is the U.S. presence in Asia that is causing the tension and that if we would just retire from the area the Communists would be good and change their violent ways. They seem to want to concede hegemony over all Asia to China on the basis, first, that there isn't anything we can do to prevent it and, second, that it will somehow stabilize the world. They reject as irrelevant the effect a failure on the part of the U.S. to resist Communist aggression in the small countries of Southeast Asia would have on other countries in the world who have linked their fortunes to us. To the credit of these political strategists, they acknowledge that it will be a difficult thing to extricate the U.S. honorably from South Vietnam. At the same time, they cry that we cannot possibly win in Asia and that we had better prepare for a catastrophe.

The political strategists who oppose the war find considerable support for their position among certain members of European states and to some degree in other parts of the world far removed from the scene. Unfortunately, the Communists, in their official statements and actions, do not cooperate to reinforce the position of these "experts." For this reason, their following in the U.S. is pretty much confined to those who fancy themselves intellectually superior to the officials who happen to be running the government at this time.

The official position of our government rests on four main points. The first is that Communist North Vietnam effectively blocked the implementation of the Geneva Agreements by preventing any possibility of free elections in North Vietnam and by organizing the Viet Cong for subversion of South Vietnam. The second point is that the war is not at all a civil war but a deliberate war of aggression controlled and supported by North Vietnam and increasingly by China. The third is that South Vietnam, an independent state suffering aggression from outside its borders, requested our help, and we gave it to them and shall continue to do so until the aggression stops or they request no further assistance. The fourth point is that failure of the U.S. to honor its commitment to support South Vietnam, resulting in its subjugation, would begin a chain reaction which would lead to the whole of Southeast Asia falling to the Communists and seriously affect the credibility of our commitments elsewhere.

The Administration's attempts to explain our involvement in Vietnam have not quieted the protesters, but at the same time general if not enthusiastic support for our policies is reflected in every poll taken so far among the people. The real problem facing the government, however, is how long this support will last. The President has warned us to expect far worse before things get better. Can he feel confident that his consensus will not gradually erode away one, two, or five years from now as a result of mounting casualties, deferral of

promised programs on the home front, and the continuing carping by the opposition? In other words, are the arguments as to why we are in Vietnam good enough to sustain us over the years which will probably be required to rescue and stabilize South Vietnam?

I suggest that we can make a much better case that the war in Vietnam is the right war in the right place and at the right time. But to do this we must take a much broader view of the action than Vietnam, North or South. We must go to the basic ideological conflict between Communism and the rest of the world that is not Communist. The Communist theoreticians have always recognized that their philosophy can never exist in security unless it is universal. The one thing that the leaders of both Russia and Red China agree on, as an article of faith, is that there can be no such thing as a world half Communist and half free.

The Russians and the Chinese diverge, however, on the strategy for attaining the goal of universal Communism. This difference stems from the basic beginnings and evolution of Communism in their respective areas of influence. Except for a short period in Russia itself, the Russian Communists have never had to fight for control of a single country they now dominate. The Chinese Communists, on the other hand, fought for over twenty years to secure their revolution. Since 1945, Russian soldiers have not used their arms in anger except for the bloody suppression of the Hungarian revolution. The Chinese Communists have fought in Tibet, in Korea, twice in India, and in minor actions against the Nationalist Chinese during the same period. The experiences of the Russians make them no less intent on world domination but far more inclined towards political and economic penetration than the Chinese, who wholeheartedly accept Mao's precept that power comes from the barrel of a gun. It is this difference in strategy —the "peaceful" versus the violent—that characterizes one of the elements of the Russian-Chinese schism.

In the past twenty years, the United States, as the first bastion of defense against the spread of Communism, has coped pretty well with the Russian brand of expansion. We are uniquely equipped to do so because of our vast economic strength, our overwhelming military power, and our geographical position in the world. Today our strong nuclear deterrent, coupled with an enlightened aid program and the political understanding we have gained over the years, is containing Russian Communism. These factors have not, however, dimmed the vision or altered the plans of the Chinese for a Communist-dominated world.

Mao has said that China despises its enemies strategically while respecting them tactically. He is talking about the United States, which he regards as his principal enemy, but he is thinking of other wars and other enemies. He remembers how his own forces, poorly armed, clothed, and supported, took on the Nationalist Chinese forces and, in the long run, beat them. He recalls how, in the 1950's, his armies, still poorly armed, fed, and equipped, were able to hold the might of the United States to a stalemate in Korea. He remembers how his little red brother to the south, Ho Chi Minh, adopting Mao's tactics, forced the French to withdraw from Indochina.

Not only is Mao convinced that his strategy can win in Asia, he believes that the same tactics can win anywhere in the world and even the world itself. The Red Chinese plan for world domination was only recently restated by Lin Piao, the Defense Minister, who pointed out that encirclement of the cities from the countryside, a proven tactic, could be extended to the encirclement of the developed areas of the world—America and Western Europe—from the underdeveloped areas of Asia, Africa, and South America.

The tactics of Mao have worked well for him and for Ho in Asia. The lightly armed guerrilla, living off the countryside, supported at least passively by the peasants, now concentrating for a strike against a single defense post or village, then swiftly melting into the countryside, is a formidable enemy. Weapons of massive retaliation are useless against him directly. South Vietnam, with at least four times as many regular forces as the guerrillas, would long since have been overcome if it had not been for our help. Even today, greatly outnumbered and overwhelmingly outgunned, the

Viet Cong still controls large parts of the ground in South Vietnam. Once again the correctness of Mao's thinking is reinforced. He believes that there is no way to counter such a threat. In his view, victory in the end is inevitable. Time is of no consequence.

Today we are fighting Mao's favorite kind of war in Vietnam, testing for all the world to see whether or not his methods are invincible. If we win—and by win I mean free South Vietnam from the Viet Cong terror—we shall prove to the world that they are only a phenomenon of time and place and not the guarantee of success he proclaims. If we withdraw or even negotiate for anything less than a free South Vietnam, we shall have given the Communists the one great victory they *must* have to exploit their philosophy of violent revolution throughout the world. This is why we must fight and win in Vietnam.

The theory of violence as a credible option for Communist expansion must be disproved now and forever, and Vietnam is the place to do it. If we can stop Communism cold in South Vietnam, we shall have done more to discredit Mao and his followers than any other thing we could do. We shall have done it on mainland Asia in a climate, on a terrain, and under conditions that are as favorable to the "Chinese method" as could be found anywhere in the world. If we can win in Vietnam, we will show the world that the violent brand of Chinese Communism can be contained just as we have so far contained Russian Communism. Beside this one point, all of the other current arguments in favor of our presence in Vietnam pale into insignificance.

The strategic importance of South Vietnam is not only its geographical position but its significance as a testing ground against the Communists' violent approach to expansion. Today the overriding factor in South Vietnam is that there are many people who want to resist engulfment by the Red Tide and have been fighting and dying for years to prevent it. As long as that will exists, they merit our continued help as proof to other threatened countries that they too can preserve their freedom.

The defeat of Communism in South Vietnam, however, must have implications far beyond the borders of that tortured land or else it will indeed be a limited victory. As aggression and terrorism are forced into retreat, the fruits of freedom must come to those who risked so much to save it—the people of South Vietnam. The real payoff to the United States will come not just from silencing the guns but also from the creation of living proof that both national and individual progress can be achieved peacefully, and not at the awful price of the loss of liberty and human dignity which Communism exacts. A peaceful revolution takes time. The conditions of the peoples of the underdeveloped world are becoming more desperate with each day. We must have time and stability to help them progress towards a better life, or we shall all be inundated by a human sea of disaster. It is the height of folly for any country in the non-Communist world, particularly for the United States and the countries of Western Europe, to think that it has no stake in the outcome of the war in Vietnam. The vision of Asia, Africa, and even South America aflame with violent revolution, wasting and destroying all that free men have created in terms of a peaceful, stable world, is as horrible to contemplate as a nuclear war. Today our fight in Vietnam is an attempt to buy the time and the chance for the developed nations of the free world to act.

In my opinion, there is every incentive to intensify our efforts to free all South Vietnam from the Viet Cong terror with decisiveness and dispatch. Although there may be well-founded reservations as to what military actions we should take outside South Vietnam to supplement our "in country" efforts, these issues do not and should not pertain below the 17th parallel. The first step is to demonstrate both by word and deed beyond a shadow of doubt that we intend to do whatever is necessary to insure this limited outcome. The military strategy of the Government of Vietnam and the United States must be to run the Viet Cong to earth, forcing contact at every opportunity, drying up their sources of resupply, denying them any rest, and demoralizing them to the point that every VC soldier knows defeat is ahead. To do this, we need to press ahead with

our offensive in South Vietnam. We must move boldly into the areas where the VC is strongest, taking full advantage of our vastly increased air mobility and aerial firepower. We have not yet begun to fight the kind of aggressive action it will take to stop the invaders—as evidenced by the fact that the night still belongs to the Cong in a good many of the areas nominally secured. We still haven't convinced "Charlie" that he can't win by violence, and until we do that, there is no foreseeable end to his terror tactics.

Once we have eliminated organized Viet Cong units from a section of the countryside, we must quickly follow with programs of aid and rehabilitation, coupled with political moves aimed at building up the people's confidence in the central government. Guaranteed protection against Communist terrorism, a sense of identity with the government as the head of an independent state, and a vision of a better and more peaceful future are the ultimate answers to Communist aggression. This is the victory we seek in South Vietnam and for the world.

One may ask, "Can China afford to let us win such a victory in South Vietnam?" In my view, the proper question is, "Can China afford to intervene to deny us this objective?" Today Mao knows well how strong our nuclear deterrent is. He knows that he does not possess a nuclear deterrent or a credible threat of nuclear blackmail even against our Asian friends. For us, the situation for stopping Communism will never be better than it is today. We should let it be known throughout the world that we accept without question the truthfulness of the Chinese statements of their plans for world aggression. We should announce that we consider ourselves to be threatened by these goals because of the ever growing capacity of the Chinese to put them into effect. We should make it clear that, while our objectives in Vietnam represent no threat to China itself, we cannot and will not tolerate either her direct participation in South Vietnam or any diversionary excursions in other areas of concern to us. While our response in Vietnam is strictly limited, we must leave no doubt in Mao's mind that these limitations will not prevent an adequate response to any offensive moves on China's part to alter the situation. We had the courage to give the Russians such a message in Berlin and in Cuba, and they listened. Surely we still have that fortitude today.

In conclusion, let us recognize the real enemy and the real stakes in Vietnam. Let us state unequivocally not only to our own people but to the people of all the world that the United States is in Vietnam not by accident but by design in accordance with our continuing policy to contain Communism wherever it threatens our goal of a peaceful, stable world. Let us make sure that the whole world understands that we are opposing not a group of nationalists attempting to unify their country but an integrated, well-planned Communist strategy of violent world conquest, whose most recent thrust began at the 17th parallel in Vietnam.

Air War College

NEEDED FOR GOOD MANAGEMENT: NEGLECT AND MALDISTRIBUTION

LIEUTENANT COLONEL HENRY SCHEINGOLD

NEGLECT and maldistribution of resources could very well be the key to success for the average Air Force manager. What I am talking about are the "Principle of Calculated Neglect" and the "Principle of Maldistribution of Quality Losses," both outgrowths of Pareto's Curve. The purpose of this article is to demonstrate methods by which seemingly negative management can be used to advantage.

J. M. Juran, a consultant management engineer, attributes these principles of neglect and maldistribution to Vilfredo Pareto, the Italian economist who first noted such a relationship in the distribution of wealth. Loosely translated, Pareto's Curve says that in any series of elements to be controlled a selected small fraction, in terms of the number of elements, always accounts for a large fraction in terms of effect. (This is not to be confused with the principle of "Management by Exception," which calls for increased attention on significant exceptions to expected results.)

To do an adequate job and still keep up with the constantly increasing demands which fall on his shoulders, the military manager must ensure that he is utilizing his time most effectively and that inefficiencies are identified and corrected quickly. What is called for is not just emphasis on saving time and increasing efficiency but, of greater importance, increased attention to what he spends his time on as well as to the order in which he does things. It follows that greater effectiveness in the utilization of time increases output.

My purpose, then, is twofold: first, to demonstrate how through application of the Principle of Calculated Neglect the manager can, with a little organization, multiply the effectiveness of available time by as much as 15 times; and, second, to show how he can more effectively detect and identify inefficiencies and ineffectiveness by use of the Principle of Maldistribution of Quality Losses.

The Principle of Calculated Neglect is based on the almost universal proposition that in any situation dealing with significant numbers of items it is easy to rank these items according to importance, from the most important to the least. The top 10% of these items, by number, will represent more than 60% of the total value of the entire listing. Conversely, the bottom 70%, by number, will represent 10% of the total value; and the remaining 20%, by number, approximately 30% of the total value. For example, in the average Air Force Base Supply account, 10% of the items will represent more than 60% of all issues; 70% of the items, less than 10% of all issues, etc.

In short, the Principle of Calculated Neglect is based on separating the vital few from the trivial many and concentrating on the former.

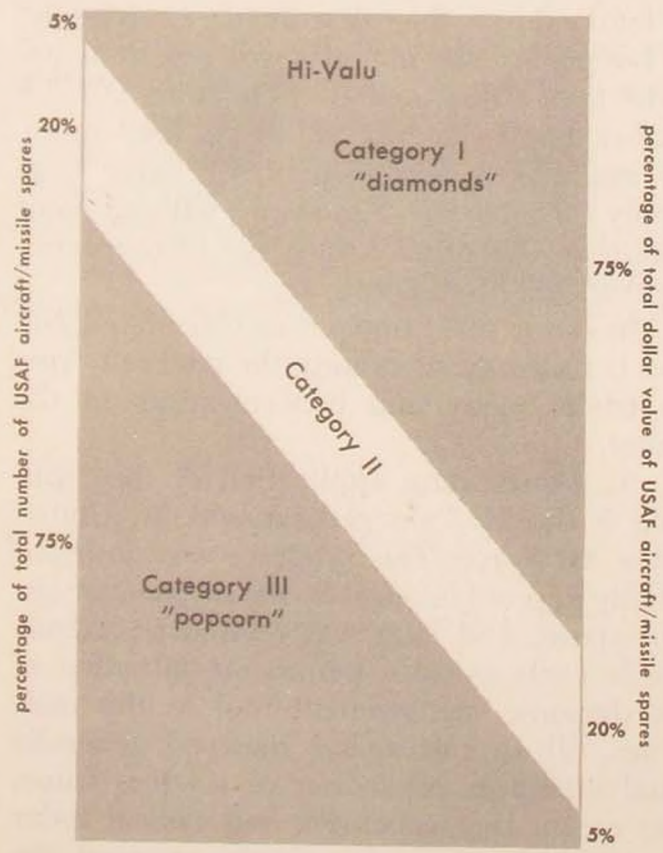
An outstanding application of this principle is the Hi-Valu program of the United States Air Force. This program was designed initially to provide sensible management of aircraft spares and later was revised to include missile parts as well. Before the initiation of this dynamic management tool in the mid-Fifties, all aircraft spares received generally equal attention, regardless of relative value. This meant that expensive and critical radar components and engine spares received the

same attention as rivets, radio tubes, and common hardware. There was no appreciable difference in accounting, inventorying, or stock-control methods, and all were given equal treatment while in transit and in storage.

The Air Force started by listing all aircraft spares with unit values of $10,000 or more as Category I or Hi-Valu spares, those with unit values of $10 to $10,000 as Category II, and those with unit values less than $10 as Category III. Almost without exception, Category I and II items were coded as recoverable, and accountability was maintained throughout the life of the item. On the other hand, Category III items were coded as nonrecoverable, and accountability was terminated upon issue. It soon became known as the "diamonds and popcorn" program.

It is obvious in Figure 1 that 5% of all aircraft spares account for 75% of the total dollar value, and, conversely, 75% of all aircraft spares account for only 5% of the dollars, while the Category II spares are on a 20/20 basis (all figures approximate). This is a classic example of the Principle of Calculated Neglect in action: giving less attention to the large number of low-cost items in the Air Force spares inventory, to the point of deliberately neglecting them (to a degree).

Figure 1. Pareto's Curve as applied to the USAF Hi-Valu program



After the program was initiated, the Air Force took follow-on steps toward ensuring its perpetuation, with built-in mechanisms for adjustments as necessary. The vital 5% items were selected and listed in specialized Air Force Technical Orders. In addition, regulations were published which made it mandatory that they be given special handling in the form of fast return of reparables to overhaul facilities, specialized packaging and marking, segregated storage, premium transportation, and faster reaction on the part of all agencies involved.

The application of this principle to everyday management is not difficult. First, a manager should list all known tasks, objectives, responsibilities, and problems in order of importance. He should then group them into three categories so that the top grouping (Category *A*) would consist of 5% of the items, the bottom group (*C*) would consist of 75% of the items, and the mid group (*B*) the remaining 20%. The completed listing will automatically reflect the "vital few" in the *A* category, and the *C* category will list the "trivial many." The probable results are graphically portrayed in Figure 2. Proportionately speaking, time spent efficiently on Category *A* items will probably be more than 15 times as valuable as time spent on Category *C* items.

When the workload has been catalogued, the manager is in a position to apply his time and energy to the most important tasks within his area of responsibility. He should delegate Categories *B* and *C* to subordinates and expend only about 10% of his time and energy in monitoring these items of lesser importance.

The manager must keep in mind a most important point: the *B* task ignored by a subordinate today may become the *A* task for the attention and action of the manager tomorrow. The manager who continually avoids the difficult and the distasteful will, on inspection, probably find that he is also avoiding the neces-

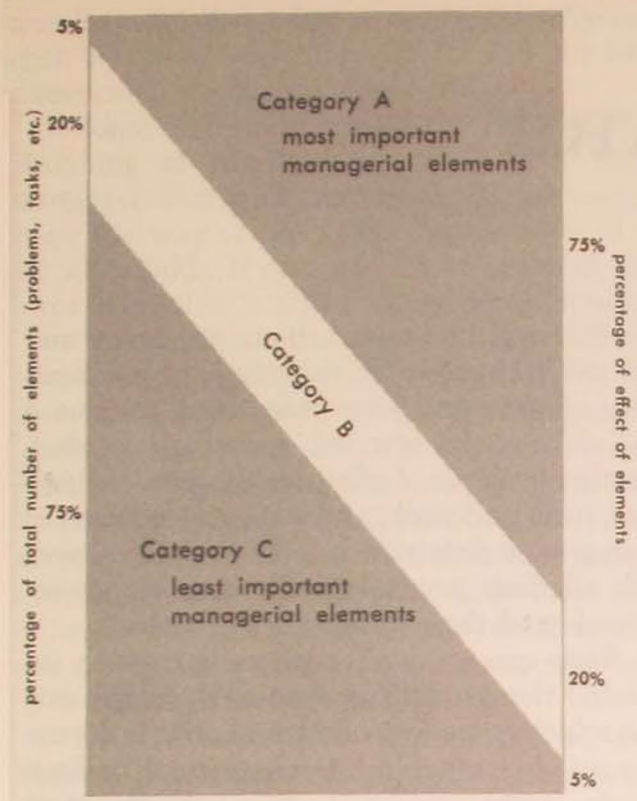


Figure 2. Pareto's Curve (the "Principle of Calculated Neglect") as applied to the cataloguing of managerial responsibilities, tasks, and problems in terms of importance and impact in a hypothetical situation

sary and important—the Category *A* tasks. Generally, such a person will seek out mundane tasks which he knows he can handle (the Category *B*'s and *C*'s)—a retreat to the familiar that will leave the important undone. Since this manager cannot delegate his Category *A* tasks, they probably will remain undone. Such a manager, be he lazy or inadequate, is on the sure road to failure.

The Principle of Maldistribution of Quality Losses is based on a secondary application of Pareto's Curve, which suggests that in any industrial situation less than 10% of the workers performing a specific operation will be responsible for more than 65% of the rejects. Juran says this is good in that it permits concentration on the few real offenders, with the result that great improvement at minimum cost of investigation is possible.

Let me further demonstrate this phenomenon from personal experience. About ten years ago, I was a supply officer on Okinawa. We had 18 supply inspectors in base supply, and our daily error rate in that department was inordinately high. Quiet observation of the output of all 18 inspectors over a period of a week revealed that 75% of the errors were caused by two inspectors. They were temporarily reassigned elsewhere. A dramatic decrease in inspection errors was immediately noted, without an appreciable loss in output. (Reinspection of errors is time consuming.)

Applications of this principle in everyday management are numberless. It can be applied to aircraft and automotive maintenance, records keeping, ground safety, personnel evaluation, etc.

I am sure that managerial techniques similar to those discussed here are in use in the Air Force today; but in the face of increasing costs, reduced manpower, and advancing technology all ideas should be considered. The progressive manager will not discard an idea because it seems unfeasible or ridiculous. Anything is feasible if it is important enough. Napoleon refused to recognize the existence of the word impossible, and Alfred North Whitehead said that almost all really new ideas have a certain aspect of foolishness when first proposed.

The principles advanced here are not new, of course. Confucius recognized the need for the Principle of Calculated Neglect 2500 years ago. When asked for advice by a minor government official, he said, "Ignore minor considerations. If you let yourself be distracted by minor considerations, nothing important will ever get finished."

322d Air Division (MAC)

THE NEW WARFARE

CAPTAIN WALTER W. WEISBECKER

THE "new warfare," in the manner of the "new ethic," is rightly the subject of endless conjecture. At conferences, symposiums, wherever military professionals meet, the discussion is heard. Unlike the new ethic, however, the new warfare is a hard reality. For among the military erudite there is the growing realization that there now exists in the world technology which can radically affect the balance of power in a manner as new as Mackinder's theory must have seemed to the Royal Geographic Society on that London evening in the early 1900's.

The question goes, What happens when the Soviets develop a shoulder-fired antiair rocket similar to our Army's Redeye? Such a missile, perhaps refined slightly, could toll the knell for interdiction and close air support. Every three guerrillas would have their own antiaircraft battery, and attack would be infra dig.

The repercussions of this possibility, which would negate our preponderant air superiority or supremacy, open fascinating problems in tactics and strategy to those who must overcome such a development. Initially such a counterthreat would shift the emphasis of our air power back very quickly to the long-range politico-strategic lever so familiar in World War II and during SAC's golden age in the Fifties. But this lever will then suffer, in supposition and reality, from the undoubtedly increased use of high-altitude surface-to-air missiles (SAM's) by the opposing faction. This projection is being intensified because it is far easier, both politically and militarily speaking, to supply a dependent country with hardware than with an air force.

Extrapolating these arguments, then, one can easily imagine the severe and testing pressure that will be applied to our air power and that will ultimately be the gauge of our flexibility of thought. Some may even imagine a kind of latter-day standoff, a strategic Verdun, a further example of offensive weapons on both sides, neck and neck, and the specter lesson of impregnable fiefs and trench warfare relived, with all their psychologically erosive powers revived—and their uncertainty of victory.

How can we avoid such an apparently inevitable though little-spoken-of development? One solution, unmentioned until now, is the use of a suitably reliable intercontinental ballistic missile (ICBM) in conjunction with the most powerful conventional explosives. An ICBM targeted directly against objectives heretofore considered *tactical.*

Imagine, if you will, the political shock effect, the confusion that could be caused by a rocket launch, again armed with conventional explosives, directed against a foreign target. Imagine the advantage to the United States, with production-line capacity, off-the-shelf availability of hardware, and home-ground security and convenience supporting such a program. But perhaps the most striking proposition occurs in the contemplation of techniques utilizing economical thin-walled rockets and solid fuels from a production line.

In a usage of this type, mission completion appears to be no problem: witness the firm *mission* success statistics of the Thor. And an antipersonnel shot could cover many thousands of square yards, yet not violate the Geneva accord. Thus we have the advantages of automation and avoid the disadvantages of propaganda.

Nor is the safety factor critical, for a destruct discrete may easily be issued prior to sustainer engine cutoff (SECO) or vernier engine

cutoff (VECO) if the shot is not ballistically correct. For here we deal tactically and not with irrevocable strategic considerations.

Some may say this tactic awaits a further shrinking of circular error probability (CEP) on target. But such shrinkage has, of course, been the way of life in the missile as well as all other fields. It may well be argued that this error reduction is still a future development.

The worth of the original suggestion of eventual ICBM delivery of conventional explosives will be enhanced by the development of more powerful conventional explosives, currently undergoing much review in the world. No countermeasure to such use of rockets exists at this time. But beyond that already very stimulating fact, one may stare into—meet face to face with—a future as elusive, challenging, and imaginative as the future must certainly have looked to the Wrights.

Even a superficial examination of, say, Vietnam places the entire country within range of the already utilized system of coastal enclaves. These existent fortresses raise use suggestions ranging from *multiple* antipersonnel warheads covering distant perimeters to rockets extending areas of influence and no-passage in ways yet to be defined. Imagine, for instance, how the isolated and beleaguered defenders of a friendly village might be able to call upon the sky for another kind of aid, in all kinds of weather, even zero-zero. Here great load-carrying capacity would merge ominously with exact circular error projection. Mastery of the countryside, to the deepest and most inaccessible terrain, would be ours—*instantly*—in a very special way.

In short, Napoleon's Sleeping Giant will have lost the final game before it begins. It is a foregone conclusion that even that massive and implacable nation, in its highest and most secret meetings, must have realized that its long-range threat was a tenuous thread rendered unattainable by the hundreds on hundreds of precise ICBM's in this country's silos. Mathematically forever outdistanced there, the giant has turned to the tactical scene.

Implementation of the suggested tactical conventional missile would bring nonnuclear automation to bear upon that great, landbound, primitively grouped army. It would also provide the security which the free world seeks.

So, no further in the computerized future than a decision, one may see missiles launched in local response, on the shortest notice, against the smallest rain-swept stockade or fortified battalion.

In short, it is possible to foresee any desired tactical target, even of a limited nature, subject to automated 25,000-mph delivery of conventional explosives.

McConnell Air Force Base

Books and Ideas

AMERICA'S MOST FAMOUS BOMBER

Dr. William S. Coker

IT WOULD hardly be an exaggeration to say that no other airplane has enjoyed the popularity of Boeing's famous B-17, the Flying Fortress. The reasons for this well-deserved acclaim are legion. The backers of long-range, high-altitude, daylight, precision bombing pinned their reputations on the Flying Fortress after 1935. But this trust got off to a shaky start with the B-17's baptism of fire.

The first Fortresses to see combat were twenty B-17C's acquired by the British in the spring of 1941, under terms of the Lend-Lease Act. The first B-17C to arrive in England suffered a collapsed landing gear and never flew again. "It was cannibalized," as one observer said, ". . . until the ship was picked as clean as a Thanksgiving turkey." Against the advice of U.S. Army Air Corps officers on the scene, the Royal Air Force on 8 July 1941 began to use them on daylight missions to the Continent. This early experiment can best be labeled a "tragedy of errors," in part because the "C" model could not be classified an offensive combat plane on the same terms with later models such as the "E." Also the RAF crews lacked experience in using the B-17 to its best advantage. By September the RAF had flown them on 22 missions. Of a total of 39 planes dispatched on those missions, only half bombed primary targets, 2 bombed secondary targets, and only 2 1100-lb bombs hit the desired areas. Eight B-17's were destroyed or lost. Discouraged by these efforts, Bomber Command turned the remainder of the Fortresses over to Coastal Command for reconnaissance work. The British called them "Flying Targets," and Herr Goebbels, the German Propaganda Minister, derisively labeled them "Flying Coffins."

Even the early wartime experience of American airmen in the Pacific could hardly be considered an unqualified indorsement of either the B-17 or strategic daylight bombing. Nevertheless, the B-17 found itself in the thick of the fight from that Sunday at Pearl Harbor

when the Japanese caught several flights of Fortresses trying to land at bases in Hawaii. The record of courage and heroism displayed by the B-17 crews in the Philippine Islands and points south in the months following 7 December 1941 would also be hard to equal. Unfortunately, the actions of this small force were hardly more than a pinprick against the overwhelming Japanese forces pushing toward Australia.

In line with the decision to make Europe the primary target before turning to the Pacific, the Flying Fortress came into its own over *Festung Europa*. By the summer of 1942, American heavy bomb groups began arriving in England equipped with a much-improved Fortress, the B-17E. From its first mission with the Eighth Air Force on 17 August, when 12 B-17's hit Sotteville-Rouen, France, until its last attack on an industrial target at Pilsen, Czechoslovakia, on 25 April 1945, the B-17 made Goebbels eat his words. The deeds of these airplanes and their valiant crews have been recorded many times. The Flying Fortress more than justified the faith of its advocates.

Since model number 299 first flew on 28 July 1935, the Flying Fortress has been featured in numerous articles, books, movies, and lately in a television series. Now two decades after its starring role ended, two new books have been devoted to the Flying Fortress. The first of them is much the shorter and contains nothing particularly controversial that would warrant extended discussion.

The study by Steve Birdsall is a volume in the Morgan Books "Famous Aircraft Series."† The narrative is primarily confined to the historical development of the B-17 and the air war in Europe, but there are a number of facts and photographs pertaining to Fortresses in the postwar years that are very interesting. For example, there are pictures of the boneyard at Kingman, Arizona, here hundreds of B-17's are stored, and pictures of Flying Fortresses used by the Israeli Air Force, the French Institut Geographique National, and the Brazilian Air Force. Incidentally, the author points out that the Brazilian Air Force still had nine B-17's flying at last account. He notes the end of an era when a Boeing IM-99 Bomarc missile destroyed the last QB-17 in June 1960.

Birdsall concludes his story with a review of seven "memorialized" Fortresses and their locations. To mention two of the group, "The Swoose," of Pacific war fame, was presented to the National Air Museum in 1949 and is still in storage at Kingman; and "Memphis Belle," whose crew was the first to complete 25 missions over Europe, is now on display in Memphis. Memories will also be jogged by pictures of such B-17's as "Daddy's Delight" and "Satan's Workshop." The supplement contains a 23-page extract from the Air Force pilot training manual on the B-17.

EDWARD Jablonski begins his account with a brief historical sketch of the Boeing Aircraft Company and its association with the Army and Navy.†† He carefully traces the evolution of the Fortress from the ill-fated Project "A" (Model 299) through the eight succeeding model changes to the last of the Fortress line, the B-17G. Some of the more specialized models are also mentioned, such as the B-17H, a long-range air-sea rescue plane; the PB-1, the Navy's antisubmarine and search aircraft; the XB-40, the Eighth Air Force's heavily armed "escort-fighter"; and the XB-38, an experimental model with four liquid-cooled Allison engines in place of the regular Wright R-1820 "Cyclones." In addition to a large number of previously unpublished photographs,

†Steve Birdsall, *The B-17 Flying Fortress* (Dallas: Morgan Books, 1965, $2.95), ii and 54 pp.

††Edward Jablonski, *Flying Fortress: The Illustrated Biography of the B-17s and the Men Who Flew Them* (Garden City, N.Y.: Doubleday & Co., Inc., 1965, $6.95), xxii and 362 pp.

A Boeing B-17 attacks the Ploesti, Romania, oil refineries on 15 July 1944 as bombs drop from another B-17 flying at higher altitude. Antiaircraft flak bursts near the bomber, and smoke from bomb explosions mixes with a German smoke screen below.

Jablonski's major contribution is his success in breathing life into the story by his abbreviated biographies of the men who flew the Flying Fortress.

The Eighth Air Force enjoys a lion's share of this study, with the "Bloody 100th" playing the leading part. The two excellent chapters devoted to this bomb group tend to dispel many of the myths surrounding its supposedly ill-starred career.

Sometimes, however, the Flying Fortress gets lost in the related narrative. This is true of the chapter on prisoners of war, which is an enlightening discussion and includes some unusual pictures. Much the same can be said of the account of friendly and enemy fighters. But the chapter on the B-29 Superfortress is a fitting climax to the story of its illustrious predecessor.

In the epilogue Jablonski attempts to moralize on the issues of strategic and area bombardment. He poses the delicate questions of the bombing of women and children and the destruction of nonmilitary targets. This chapter is also a counterattack against apologias such as Hans Rumpf's *The Bombing of Germany* (1963). In that book Rumpf attempts to shift the moral responsibility for the destruction wrought by the USAAF and RAF from the Axis to the Allies. It is inconceivable that the air war against Europe can be blamed on anything but the greedy ambitions of Hitler and his sometime ally Mussolini. They began the war and, after overrunning almost everything in sight, attempted to make Europe an impregnable conquered fortress. But, as the late President Franklin D. Roosevelt pointed out, they overlooked one thing: they "forgot to put a roof on it."

The supplement contains some interesting and pertinent information on the B-17. A photographic essay of a mission depicts events from the moment of decision regarding the target to evaluation of the strike results. The tabulation of technical data and production statistics on each model of the Fortress enables the reader to compare the various series. A brief semitechnical description of the design and operation of the B-17, along with cross-sectional diagrams, should satisfy the armchair engineer. Finally, extracts from the pilot training manual provide a wealth of information about the duties of the crew members and many other aspects of the Flying Fortress.

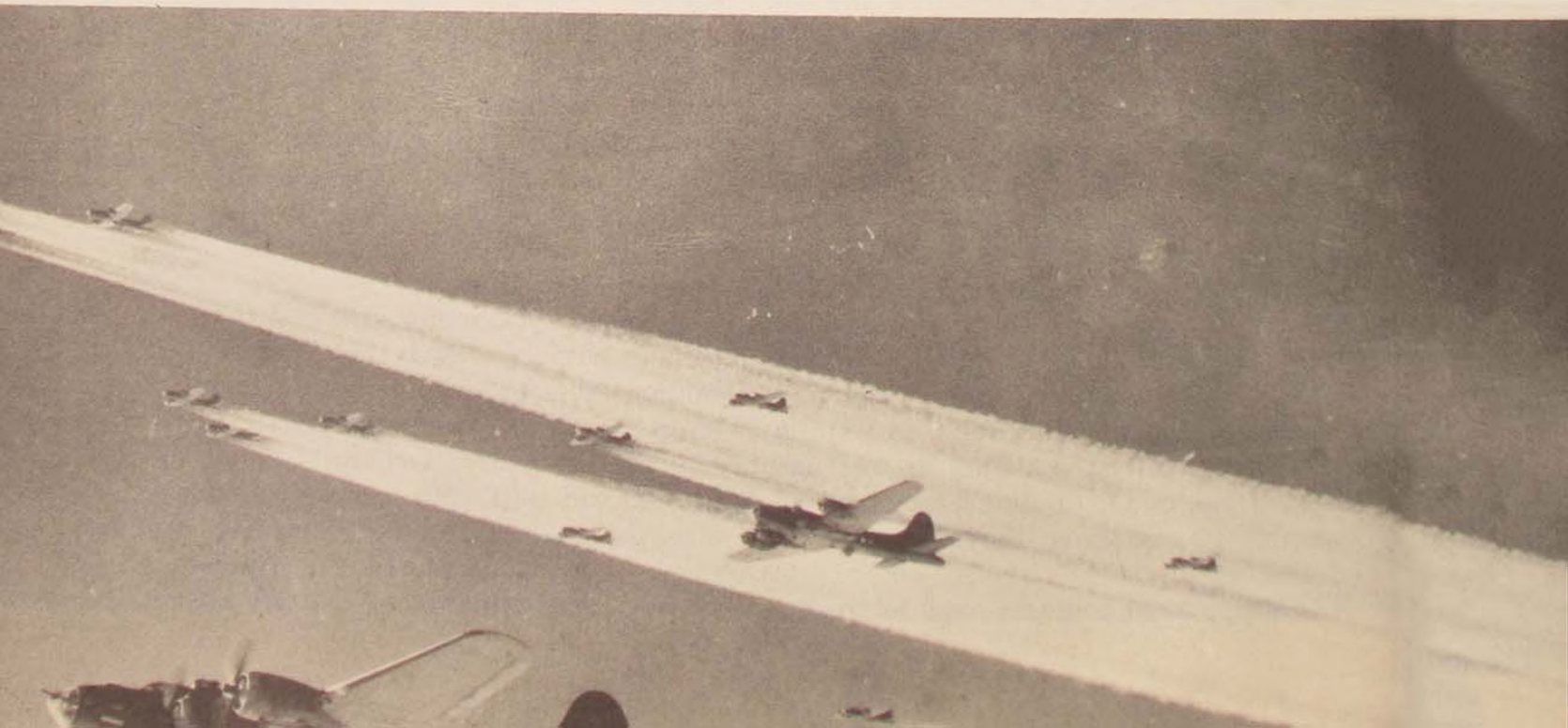
Jablonski's account contains few errors, but as in most good things a few oversights are evident. Some no doubt are typographical, such as the one listing the mileage from Lima, Peru, to Buenos Aires, Argentina, as 6000 miles (p. 18), and "ironies" appears as "ironie" (p. 43). Lt. Col. Gene Gurney's name is spelled two different ways (pp. xv, 341, and 344). There were a few lapses in the indexing of the volume: Lieutenant Lawley and Sergeant Mathies (pp. 149–51) are not referenced under the Congressional Medal of Honor entry although other CMH winners are. One minor organizational matter should be cleared up: On pages 141 and 233 it is implied that the Fifteenth Air Force was created out of units from the Ninth and Twelfth Air Forces and that *then* the Ninth Air Force was transferred to England. Actually some units of the Ninth were turned over to the Twelfth, and the Ninth moved to England and became operational there in October 1943. When the Fifteenth was created on 1 November 1943, six heavy bomb groups of the Twelfth served as its nucleus. Thus, the Fifteenth Air Force did not inherit any units *directly* from the Ninth Air Force.

Perhaps the major criticism from the historian's point of view is that, except for a short bibliography, the study is not documented, and efforts to check statements are thus at a dead end. To illustrate: General Carl Spaatz, Jablonski states (p. 156), maintained during and after the war that "Had the strategic bombardment offensive been pursued fully in all its phases . . . Germany could have been beaten

without the necessity of invasion." Some air leaders did hold this conviction; but the following account of a conversation with Air Marshal Sir Arthur T. Harris, Commander-in-Chief of RAF Bomber Command, and the Honorable John Winant, United States Ambassador to Great Britain, speaks for itself. While discussing the general strategy of the war in Europe at High Wycombe on 26 June 1942, Spaatz argued that the war could not be ended until the Allies actually landed on the Continent. Harris, on the other hand, contended that prolonged bombardment of Germany's vital industries alone could do the job, and he feared that an invasion might mean another Dunkirk. Spaatz conceded that no such effort should be made until the Allies had uncontested aerial supremacy. Ambassador Winant supported Spaatz, but Harris remained unconvinced (*Spaatz Extract Diary,* 26 June 1942). In an article written after the war, entitled "Strategic Air Power: Fulfillment of a Concept" (*Foreign Affairs,* April 1946, p. 396), General Spaatz concluded:

> Strategic Air Power could not have won this war alone, without the surface forces. . . . Further, the invasion by land was necessary in order to force the diversion of German manpower from production, and even from manning the Luftwaffe. Thus, this war was won by the coordination of land, sea and air forces, each of the Allies contributing its essential share to the victory. Air power, however, was the spark to success in Europe.

The B-17C of 1940, with its new flat-paneled side gun positions, one blister under the fuselage, and greater armor plate, scored its first hits on the Scharnhorst *and* Gneisenau *in the harbor at Brest. . . . High-flying Fortresses of the 385th Bomb Group boldly aim their contrails toward the Messerschmitt works in Brunswick. . . . Consolidated B-24 Liberators of the Fifteenth Air Force (right) hit the Ploesti oil refineries despite the smoke screen.*



In view of this record, it is a little surprising to find General Spaatz quoted as believing that the war in Europe could have been won by bombardment alone.

One additional statement that warrants some discussion is the author's comment that the "... B-17 was the best combat aircraft ever built." (p. 142) No one would want to write or say anything to detract from the enviable and excellent record achieved by the B-17 during World War II. But the professional competition and rivalry between B-17 and B-24 crews inevitably led to comparison of the two aircraft. Certainly no matter what is said or what statistics are advanced, the question of which of the two planes was the better will never be resolved to everyone's satisfaction. Alfred Goldberg writing in *The Army Air Forces in World War II* (VI, 207–208) makes the comparison in a way that should at least modify the more extreme claims. Initially, the B-24 Liberator could carry more bombs farther and faster than the B-17; the need for increased armament on the B-24 in Europe eventually offset these advantages. But the B-24 still enjoyed the nod over its rival in the China-Burma-India and the Southwest Pacific areas.

The B-24, sometimes nicknamed the "Pregnant Cow," also mothered two offspring, the C-87 and the C-109. The C-109 was really a converted B-24, but the C-87 Liberator Express was a distinct transport model, of which 291 were produced. Together they gave the Liberator a wide variety of uses—as bomber,

Selected B–17 and B–24 Statistics during World War II

	B–17	B–24
Accepted by AAF	12,692	18,190
Peak inventories (first-line aircraft only):		
Army Air Forces	4574 (Aug 1944)	6043 (Sep 1944)
All overseas theaters	3006 (Mar 1945)	3808 (Aug 1944)
Theaters vs. Germany	2891 (Mar 1945)	2685 (Aug 1944)
More B–17's until Apr 1944 and after Sep 1944 More B–24's Apr–Sep 1944		
Theaters vs. Japan	168 (Sep 1942)	992 (May 1945)
More B–17's until Dec 1942		
Crews on hand overseas	3485 (Mar 1945)	4367 (Feb 1945)
Combat groups overseas	33 (Aug 1944)	45½ (Sep 1944)
Unit cost:		
1942	$258,949	$304,391
1944	204,370	215,516

Source: Army Air Forces Statistical Digest of World War II (Washington, 1945) passim; Wesley Frank Craven and James Lea Cate, The Army Air Forces in World War II (7 vols.; Chicago: University of Chicago Press, 1948-58), Vol. VI, p. 206.

search and patrol plane, tanker, and transport.

Although the Fortress had been in production much longer than the Liberator, numerically the B-24 enjoyed a 3 to 2 advantage over the B-17 by mid-1944, as seen in the accompanying table. The other figures provide a statistical comparison of the AAF inventories of the two aircraft during World War II.

According to official command statistics, the Eighth Air Force lost 4754 Flying Fortresses and 2112 Liberators from all causes between August 1942 and May 1945. The attrition rate showed that overall B-17 losses (17.2%) were .6% higher than B-24 losses (16.6%). More important, B-17 operational losses in the Eighth Air Force were 15.4% against only 13.3% for the B-24. Contrary to popular opinion, the chances of returning home from a tour of combat flying in the Eighth Air Force appear to have been better for B-24 crews.

Still, many persons preferred to fly in the B-17 rather than the B-24. A number of war correspondents made this distinction, but Jablonski adds that the reporters "preferred the B-17s for no better reason than they did look better in the headlines." Colonel Beirne Lay, Jr., who flew both aircraft in combat over Europe, admitted that he favored the Flying Fortress over the Liberator, but he also concluded, "You could fight a good war with either bird."

Surprisingly, for two illustrated books on the same subject, there is little duplication in the photographs used, and even the texts are complementary. Aircraft enthusiasts will want to add both Birdsall's and Jablonski's studies to their collections.

Montgomery, Alabama

LIBERAL EDUCATION IN THE MILITARY

DR. GENE M. LYONS

THE educational programs of the military services constitute an undertaking of wide range and great importance. Their range spans from technical training for enlisted personnel to advanced education in the physical sciences and international relations for career officers. Their importance derives from the role of the services in a period of international tension and the large number of men, both careerists and short-term servicemen, who pass through the programs.

James C. Shelburne and Kenneth J. Groves, both members of the staff of Air University, offer us a catalogue of military education programs in their book, *Education in the Armed Forces.*† Their purpose is "to indicate the dimensions of the military training and educational task and to identify the various categories of the task." They make "no attempt . . . to evaluate the programs or to make judgments on the manner in which they have been organized and conducted." Their book is thus limited. Nevertheless, the opportunity to catch a sense of the broad scope of military education has value before we examine a more specialized and analytical study by William E. Simons.

Early in their book, Shelburne and Groves point out the factors that are the basis of the educational process in the military. These factors are worth remembering. The distinct characteristic of the military mission is the requirement for combat. Under conditions of modern warfare, the range of combat conditions is broadened as the United States becomes increasingly involved in the world. Military education and training must meet these demands by preparing officers and men for the most basic and cruel jungle warfare as well as for command and control of the most complicated advanced weapon systems.

New weapons place additional demands on the services. They tend to raise the mental and educational requirements for military service and set a high premium on retaining skilled personnel. The total impact, therefore, is greater specialization and a broader sense of the military profession itself. With new needs, the military profession has become more complex, forced to acquire more skills as its responsibilities and its tools have increased. Nevertheless, its basic distinctiveness remains the same—the requirement of leadership in combat.

The changing needs of the military profession have made an important impression on traditional procedures. According to custom, advancement went to the generalist, to the line officer. But even as the services require greater specialization, the traditional system penalizes officers who remain in specialized slots for more than a brief tour of duty and who do not move widely over the manifold duties of the services. Indeed, it is becoming increasingly difficult to serve in many of the military specialties except at the risk of superficiality. Consequently, there is tension between the traditional system giving weight to the generalist and the newer system requiring specialization.

The spectrum of educational programs spelled out by Shelburne and Groves testifies to the response of the services to the demands of specialization. There are also signs of response in the statement they quote from the Chief of Naval Personnel in 1964:

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†James C. Shelburne and Kenneth J. Groves, *Education in the Armed Forces* (New York: Center for Applied Research in Education, 1965, $3.95), x and 118 pp.

> We are placing more emphasis on specialization in the Navy today than we have in the past. In other words, the so-called rounded career is no longer as important as the officer's specialization or his subspecialization. We are now requiring all officers to have a subspecialization of some sort. . . . it could be in strategic planning . . . political military policy, . . .management, [or] . . . international relations. But mostly it is going to be in technical areas like communications, ASW . . ., or missilry . . . I tell each selection board today . . . that they are not to consider the well-rounded background as important as how well a man has performed and the degree of specialization he has achieved in something other than his naval warfare specialty.

The task of reconciling the need for specialization with a broad sense of direction and responsibility at the highest level of authority is not, of course, limited to the military services. It is symptomatic of much of American society today. In government, in business, in other professions such as law and medicine, there are increasing knowledge and information, an increasing impact of technology, and increasing complexity, all of which require increasing specialization and more complicated division of labor. Nonetheless, at the level of high direction, as much breadth of understanding is required as is depth of knowledge up and down the line.

This need for both breadth and depth poses a problem for the future leadership of the armed services. Historically the service academies have provided the continuity in military leadership. Today the need for officers cannot be wholly or even largely met by the academies, and they must be supplemented by Officer Candidate Schools and the Reserve Officer Training Corps. Nonetheless, the academies remain at the core of the American military as the critical starting point for that part of the system of military education and training which is devoted to the development of the profession itself.

Major Simons in his book, *Liberal Education in the Service Academies*,† presents a valuable examination of the historical development of the academies and a friendly but critical analysis of the response of the academies to the changing demands of the military profession. Simons, moreover, deals with his subject within the broad educational context of the relationships between professional demands and liberal studies. Indeed, his book has been published as one of a series of studies undertaken by the Institute of Higher Education of Columbia Teachers College on undergraduate professional education. It is thus a contribution to two fields, education and the military.

Major Simons' book is an account of the struggle between military professionalism and liberal education for part of the curriculum and a sense of purpose in the academies. To Major Simons, the liberally educated man is one who "has developed an active awareness of at least four fundamental considerations: (1) context, (2) perspective, (3) uniqueness, and (4) the suitability of many criteria for objective evaluation." The kind of "open mind" that these considerations produce is important in all professions, the author suggests, but especially in the military where professional influences of tradition and corporateness are particularly constraining. The constraints are related, moreover, to the demands of hierarchy and discipline that are rooted in the profession's unique characteristic of preparation for combat.

In many respects, Major Simons' historical analysis of the service academies demonstrates a kind of cycle. In their early stages of development, the educational programs of the academies were more liberal than they were later in the nineteenth century and even early in the twentieth century. During these years, however, the sense of military professionalism was broadening. Thus, the author notes: "No longer were the unique demands of specialized corps significant forces in shaping service school curricula. At the end of the century, the academies

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†**William E. Simons, *Liberal Education in the Service Academies* (New York: Institute of Higher Education, Columbia University, 1965, $3.50), xiii and 230 pp.**

could focus on fundamental preparation for the general military command and staff responsibilities of the future."

By the 1960's, however, the academies had come a long way, in the opinion of the author, in developing liberal education in their programs. There were still pressures to prepare students for their first assignments as junior officers and to equip them with the tools of their trade through practical and technical instruction. Nonetheless, the overriding aim in the academies was to lay the intellectual foundations for career development; and in the quest for this objective, there emerged a more theoretical treatment of the sciences, a wider array of courses in the social sciences and the humanities, and the opportunity for an increasing number of students to choose electives and to adopt areas of special interest beyond the professionally prescribed curriculum. There were, however, weaknesses, and, in the words of the author:

> . . . most shortcomings can be traced to a common problem. Limited opportunity for broad reading or research, mechanistic approaches to lower-section instruction and to laboratory work, undemanding "standard answer" test items, and limited opportunity for advanced study all result from the desire to pack "a little bit about a lot of things" into a finite period of available time.

Several years ago, the late David Boroff published in *Harper's* a series of popular articles on the academies. The pieces were biting but insightful. Unlike Major Simons, Boroff wrote from the skepticism of the liberal intellectual in confronting military institutions. But he also wrote from a real concern that military officers had to be fully prepared for the variety of complex roles they must assume in today's world—as combat leader, scientific manager, adviser to foreign governments, financial administrator, engineering director, Presidential consultant, etc.

Boroff's study of the academies was neither exhaustive nor wholly systematic. It was largely impressionistic. Nonetheless, Boroff was a teacher and had done an earlier series of articles on civilian colleges. He thus brought experience to the task, and, in the main, the academies came off poorly. "Academically," Boroff concluded, "West Point is a second-class college for first-class students." At the Naval Academy, he found, ". . . there is a kind of 'Brother Rat' mentality. . . . The prevailing tone is rambunctiously adolescent. . . ." And, finally, at the Air Force Academy, "the academic arrangements are calculated to make the cadets see their academic life as a series of units or missions to be completed, not as a never-ending continuum."

The Boroff articles appeared during the time when Major Simons was working on his book. In many respects, Simons found the Boroff criticisms to be "shortsighted and cursory." But, in one respect, at least, he found them "quite poignant." Simons saw justice in the criticism that the "service academies have tended to approach education as something that can be divided into standard, bite-size units which the students can consume one at a time." But where Boroff attributed this "reducing" tendency, in considerable measure, to a largely inexperienced and often transient faculty, Simons found the teaching at the academies to be "quite satisfactory," in some cases "outstandingly skillful."

However harsh Simons may have found Boroff to be in his assessment of teaching at the academies, he himself points to the need for strengthening the intellectual commitment of faculty members. At all of the academies the faculty must work under pressure from the military training staffs that emphasize "the manly virtues of courage, stamina, and aggressiveness" and frequently communicate "a genuine distrust of intellectualism and a disdain for the contemplative approach to problems . . ." Moreover, all of the faculty at the Military Academy and Air Force Academy are officers, as are a large portion of those at the Naval Academy; and, except for a small number of "permanent professors," these officers spend limited tours of three to five or six years either in advanced study or teaching. Under these conditions there are limits in the capacity of the academies to achieve the goal called for in an Air Force Academy advisory committee report:

> An economics faculty must be composed of economists; in turn an economist (historian, physicist, etc.) is more than a person who, after a certain amount of training, spends four years in economics and then goes back to his post as a fighter pilot or administrative officer. In short, a faculty member must be a professional with a permanent commitment to his discipline.

In the final analysis, Major Simons, despite his own critical view, concludes that "too often, critics lose sight of the fact that the *fundamental* service academy issue is the preparation of career officers for the military service and that experiences and activities essential to this task cannot be sacrificed—even on behalf of greater liberalization." Once he has said this, Simons weakens much of his argument for strengthening liberal education at the academies—for deepening the intellectual life of the faculties, providing greater diversity in courses and procedures, and allowing time for greater reflection and study in depth on the part of students. Even though he argues that there need be no conflict between general education and the mission to produce "dedicated [military] professionals . . . ," he gives priority to the pressures of professionalism.

In one respect, Simons is realistic. But, in another, one wonders if he has sufficiently taken into account the changing nature of the military profession, particularly the increasing pattern of specialization that I have discussed. From one viewpoint, it might be argued that specialization puts added pressure on early indoctrination into the military profession. But, as Simons himself points out early in his book, there are especially powerful professional constraints in the military—in the wearing of the uniform, the strict regime, the concepts of rank and obedience, the tight hierarchical structure, the sense of devotion and dedication.

These constraining professional pressures will be with the officer all his life; they will become an integral part of his very existence. What would seem most important to develop in the early, essentially undergraduate years at the academies is the spirit and sense of liberal education, the "open mind" that Major Simons emphasizes. It is this perspective on knowledge as a continuing quest which, if given deep meaning and purpose during the officer's formative years, could provide a basis for the broad sense of direction that high command will demand in later years.

But the propensity to pack "a little bit about a lot of things" into the curriculum, which Major Simons finds a weakness at the academies, is no less evident in many of the other military education programs described in the book by Shelburne and Groves. In ROTC programs and the war colleges, there is often as great a tendency to add a bit here, offer two more hours of instruction there, on developing nations, guerrilla warfare, or the international monetary system, in order to insure that every aspect of a complex area of study has been covered. Too infrequently is there a willingness to be content with more limited coverage and to try to stimulate a sense of deepening and reflective inquiry into problems that cannot be solved by reference to a manual.

The American military education system is a vast and admirable construct. Its achievements have been phenomenal, in war and in peace and in the gray periods of strife and tension. This system can never become "civilianized"—nor should it. But it can—and should—become more "liberalizing" than it is, at the academies and at the war colleges. The reasons lie in the demands and burdens placed on our military leaders today. For these tasks, we need men with a driving sense of inquiry as well as a deep devotion to duty.

Hanover, New Hampshire

GERMANY REUNITED IN A UNITED EUROPE

Dr. Chester V. Easum

WHEN IN a new crisis period some fifteen years ago it seemed necessary to encourage the German Federal Republic to begin to rearm, the move was accompanied by protests of reluctance on the part of at least some thoughtful Germans. One of their concerns was the fear that the new defense force might follow too closely the pattern set by the *Reichswehr* in the days of the Weimar Republic and be found politically intractable and unreliable. Relations between civil and military authority were—and apparently still are—being prudently studied.

When Bavarian Franz Josef Strauss succeeded Theo Blank as minister of defense, Americans in Germany soon noted some improvement in the organization, development, and efficiency of the new *Bundeswehr*, but they wondered how cooperative the new minister would be, once he was in better position to assert himself. He is a very aggressive person. So when the editor of *Der Spiegel*, Rudolf Augstein, who had been critical of the Adenauer administration all along, published what the government called "defense secrets" obtained by questionable means, thus exposing himself to a charge of treason under German law, Adenauer and Strauss went after the pestiferous gadfly with heavy hammers. He had long been "asking for it" by very cleverly taking full advantage of the freedom of the press which had so far sheltered him. One of his last acts before being taken off under arrest was to order a greatly enlarged edition of *Der Spiegel*, knowing that there would be buyers for it.

Germans generally, however, who had been wondering how much longer *Der Spiegel* could go on skating on such thin ice, were soon much more seriously concerned over the government's heavy-handed abuse of its police power, so reminiscent of Nazi Gestapo methods of painful memory, than over Augstein's abuse of the freedom of the press. The grand old chancellor was untouchable; but Strauss could go—and he went. Now, in his book, *The Grand Design*,† Strauss says wryly that "when the time came to leave it was not for reasons of health." (p. 96) He continued as president of the Christian Social Union, the Bavarian wing of the Christian Democratic Union, which so far supports the Erhard government. One wonders what his political future will be. As to that, he professes in this little book to be not at all ambitious or even interested; yet one wonders.

Herr Doktor Strauss is young—barely past 50—and vigorous, and of course he is still interested. In a hard-hitting little book transcribed and translated from tape-recorded interviews, he proposes nothing less than a United States of Europe, to include France, Britain, Germany, and as many central European states now satellites of the U.S.S.R. as can be attracted into it. Such a Germany could then be unified as a member of the European community. He pays lip service to the continued presence of United States armed forces in Europe during the transition period while a

†Franz Josef Strauss, *The Grand Design: A European Solution to German Reunification* (New York: Frederick A. Praeger, Inc., 1965, $3.95), 105 pp.

new deterrent is developed under united European control, and he is "prepared to accept" that no German should (just at first) be prime minister, foreign minister, or defense minister of such a European government. (p. 26) Germany might, however, as mediator, facilitate the admission of Britain to the Common Market.

What seems to matter most to Strauss is that the western European mainland nations "cast off their pensioner mentality." (pp. 12–13) He considers it undesirable that any one of them maintain a "special relationship with America." Only an integrated Europe could become an equal partner of the United States. What he most clearly advocates is the erection of a European pillar of stability no longer dependent upon the United States but equal and friendly to it, the two to maintain the peace in Europe and America and thus contain the Communist powers while no longer being afraid to trade with them. There must be by 1970 a common policy for trade with the East (p. 24), then a nonaggression pact between the NATO countries and those of the Warsaw Pact. (p. 42)

Some of the author's statements are striking but mutually inconsistent if not contradictory. "The unification of Germany cannot be achieved either by force or by the acceptance of Soviet conditions. The attempt to use forcible methods would mean unification in a cemetery and acceptance of Soviet conditions would in the long run mean unification in a common prison." (p. 14) "It is our duty to push and probe and seize the initiative wherever we can" (p. 25), though it is a dangerous illusion to imagine that Moscow's policy of political control of her satellites has really relaxed. Yet ". . . there could develop in the next generation a feeling that we might do better to deal in the matter [of reunification] with Moscow." (p. 79)

The former minister's patience is wearing thin. (One wonders when it will be exhausted, as Hitler said on occasion that his was.) He is impatient with "annual declarations" of intent to reunify west and central Germany.

> They can have their regular annual meetings; the result will be the same and can continue to be the same. . . . We can no longer live with the situation that presented itself . . . when the Americans and the Russians shook hands across the Elbe [and] Europe no longer existed as a political unit. (pp. 40, 41)

Sometimes this practical politician who considers himself such a realist seems to this reviewer to be flying high and fast, far ahead of the avant-garde.

> Our aim is to counter the fragmentation of the European continent and to insure peace by abandoning national thinking in both Western and Eastern Europe. We decline to consider any new frontiers to divide one nation from another. What we must establish is the right of any European to the home of his choice in a free and united Europe under the rule of law, stretching from the Atlantic to the River Bug and the Black Sea. We are not interested in negotiating the recognition or non-recognition of national rights, which could only re-establish in Central Europe the antagonisms of the past. (p. 45)

Just imagine a former East Prussian, for example, choosing to return, or even a former Silesian! (p. 88) Yet, he concludes, "The final goal must be for all Europeans to live where they choose, a prospect only to be achieved by the abolition of the old national boundaries of Eastern and Central Europe."

The author concedes that Germany cannot just now turn in its old U.S. nuclear umbrella for a new French *force de frappe*, but he suggests that it might be convenient for the United States to strengthen its position in Latin America and Southeast Asia by recalling some of its armed forces from Europe whenever a united Europe is better prepared to defend itself without them. He concedes that De Gaulle seems at times "disillusioned" by the unreadiness of the Federal Republic to "engage in common action" with him; but "Germany and France cannot behave like two football teams who pack their own goal[s] and refuse to play with each other" (p. 63) and ". . . difficulties with de Gaulle must stand in the way of cooperation with France." (p. 67)

In Chapter IV, "Prospects in Germany," Strauss drags in again many of the hoary old excuses for the Germans' having permitted the rise of Hitler: "the extraordinary complaisance

of Germany's western neighbors"—as if the Germans would not have united behind Hitler even sooner than they did in resentment of just such outside intervention as he says that "those of us who stood in opposition to the Hitler regime hoped desperately" would occur, to save them from it. (p. 72) Instead, the Weimar Republic had been "grudgingly treated," and "democratic statesmen such as Stresemann and Brüning were denied what was conceded to Hitler almost with open hands." To him it seems neither intelligent nor pertinent to ask why the Germans themselves did not get rid of Hitler. This reviewer once heard Count Sforza say virtually the same thing about the Italians' acceptance of Mussolini. He did not find either convincing.

Hiram, Ohio

The Contributors

Lieutenant General John W. Carpenter III (USMA) is Commander, Air University. Upon completion of flying training in 1940, he was assigned to the 19th Bombardment Group, March Field, California. In May 1941 he participated in the first mass flight of B-17's to Hawaii. In October he accompanied the 19th to Clark Field, Philippine Islands, where he was assigned as a squadron intelligence officer and combat crew commander. When the Japanese attacked Clark Field, he was on a reconnaissance mission, aboard the first aircraft to land at Clark after the attack. The next day he flew the first reconnaissance mission to Formosa. After flying several missions against the Japanese and losing his aircraft on the ground at Clark, he left for Bataan, where he commanded the ground echelon of the 19th. Evacuated to Java by submarine, he rejoined his unit and flew combat until the 19th returned to the States in December 1942. Then followed tours at Eglin Field, Florida; in the Bombardment Training Division, Hq Army Air Forces; and with Hq Twentieth Air Force in Washington and the Mariana Islands. Postwar assignments have been at the Air Command and Staff School as student and on the faculty; in the Philippines, first as Commander, 5th Reconnaissance Group (VLR), later as Vice Commander, Thirteenth Air Force; at Hq Air Research and Development Command (1951), in various capacities including Chief of Staff; as student, Air War College (1954); as Vice Commander, Arnold Engineering Development Center, Tennessee, to March 1955; as Inspector General, later Chief of Plans and Programs, then Assistant Vice Commander, ARDC, to March 1959; as Commander, Air Force Flight Test Center, Edwards AFB, California, to July 1961; and at Hq USAF as Deputy Director of Plans, later Director of Plans to July 1964, then as Assistant Deputy Chief of Staff for Plans and Operations (JCS Matters) until his present duty, 1 August 1965.

Major Lawrence B. Tatum (USMA; Ph.D., Syracuse University) is a flight commander, 1st Air Commando Squadron (A-1E), Vietnam. After graduation from flying training in 1954, he flew F-86's and F-100's in tactical fighter units in Texas (1954–56) and Japan (1956–58). On the faculty of the U.S. Air Force Academy 1961–65, he taught international relations, defense policy, Soviet foreign policy, and a graduate course in government and politics in the U.S.S.R. In 1963 he served a TDY tour in the office of the Special Assistant to the Joint Chiefs of Staff on Arms Control. Major Tatum has contributed a chapter, "Arms Control: Relevance, Approaches and Problems," to *Defense Policy* (Col. W. W. Posvar and Capt. John C. Ries, eds., Baltimore: Johns Hopkins University, 1965).

COLONEL RICHARD J. STILLMAN, USA (Ret), (Ph.D., Syracuse University) is Professor of Business Administration, Director of Management Programs, and Director, Center for Economic Opportunity, Ohio University. Commissioned in the Regular Army in 1942, he served as Secretary, General Staff to General Patton in Bad Tolz, Germany; as Executive Officer to the Civil Administrator, Ryukyu Islands; as faculty member, Social Sciences Department, U.S. Military Academy; as Regimental Commander, Fort Ord, California; as Deputy Assistant Chief of Staff for Personnel, Hq Sixth U.S. Army; as faculty member, NATO Defense College, Paris, France; and as Assistant Chief, Policy Division, and Chief, Strategic and Technical Studies Branch, International Security Affairs, Office of the Secretary of Defense. Colonel Stillman's book, *The U.S. Infantry: Queen of Battle*, appeared in 1965, and another, *Central Intelligence Agents and What They Do*, is to be published in December 1966. He has also written numerous articles for professional journals, including a prize-winning essay, "The Pentagon's Whiz Kids," in the Naval Institute *Proceedings*, April 1966. He qualified as a paratrooper and is a graduate of the Army War College and NATO Defense College.

MAJOR WILLIAM E. SIMONS (USNA; Ed.D., Columbia University) is Planning and Programming Officer, Deputy Directorate of Advanced Planning, DCS/Plans and Operations, Hq USAF. Previous assignments have been as squadron adjutant and Assistant Installations Engineer, Selfridge AFB, Michigan, 1950-51; Personnel Services Officer, Selfridge AFB, to September 1952; student, Squadron Officer School and Columbia University, to February 1954; staff member, Air Force Institute of Technology, Wright-Patterson AFB, Ohio, to January 1956; Wing Supervisor, OJT and NCO management training, Thule AFB, Greenland, to December 1956; and Assistant Professor of History, U.S. Air Force Academy, to June 1962. He has written a book, *Liberal Education and the Service Academies* (1965), and numerous articles for professional journals.

TEÓFILO M. TABANERA is President of the National Commission on Space Research, Argentina. After graduating in electromechanical engineering at La Plata University and further study in the United States, he was named first deputy general director and technical manager of the Argentine State Gas Works (1942). Later he became director-adviser for the government-controlled carboniferous fields and general technical manager of electrodynamics. For six years he served as Professor, School of Physics and Mathematics, La Plata University. Long dedicated to the study of astronautics, he founded the Argentine Interplanetary Association, has been vice-president of the International Astronautical Federation during six terms, and a member of the International Academy of Astronautics; has represented Argentina before the Technical Committee for the Peaceful Use of Cosmic Space of the United Nations for three terms; has been president of the Inter-American Committee on Space Investigation; vice-president of the National Commission, International Year of the Quiet Sun; and has been named by the United Nations to form a special technical committee to report regarding available installations and facilities for space investigation and rocket launching at Thumba, India.

MAJOR WILLIAM F. MOORE, USAF (Ret), (M.B.A., George Washington University), is Manager, Program Measurement, Manned Orbiting Laboratory Department, General Electric Space Technology Center, Valley Forge, Pennsylvania. After training as an aviation cadet, 1948–49, he served successively as a fighter pilot, 82d Fighter Squadron, Hamilton AFB, California, to 1951; Assistant Operations Officer, 82d Fighter-Interceptor Squadron, Hamilton AFB, Larson AFB, Washington, and Keflavik, Iceland, to 1954; Assistant Group Operations Officer, 4750th Air Defense Squadron, Yuma AFB, Arizona, to 1956; student, University of California, to 1958; Central Procurement Contracting Officer, and Chief, Aeronautical Equipment Branch, SAMAP, Clark AFB, Philippine Islands, to 1960; Project Officer, Atlas, Titan, Minuteman Inertial Guidance Systems, Ballistic Systems Division, Los Angeles, California, to 1962; student, Air Command and Staff College, to 1963; and Missile and Space Staff Planning Officer, Directorate of Production and Programming, Hq USAF, until his retirement in 1965.

DR. JOSEPH W. ANNUNZIATA (Doctorate, Sorbonne) is an Education Specialist, Documentary Research Division, Aerospace Studies Institute, Air University. Under a Fulbright Travel Grant and a French Government Assistantship in 1960–61, he studied at the Sorbonne while teaching at a French lycée near Paris. Under a Fulbright Fellowship he studied for another two years, meanwhile lecturing at the Catholic University of Paris. During his three years abroad Dr. Annunziata also visited extensively in Russia, Poland, East Germany, Scandinavia, Morocco, and the Middle East. At Yale University, 1963–65, he held both Yale and Boies Fellowships while a candidate for Ph.D. in comparative literature.

COLONEL WILLIAM S. BARKSDALE, JR. (B.S., Virginia Polytechnic Institute) is Commander, Aerospace Audio-Visual Service, Military Airlift Command, Orlando AFB, Florida. Commissioned in the Army Artillery in 1937, he transferred to the Air Corps and completed flying training in 1939. He served at Langley Field, Virginia, and MacDill Field, Florida, for two years; then as Deputy Commander, 6th Ferrying Group; and Commander, Flying Transport School, Air Transport Command, Homestead AAB, Florida (1942). In India he commanded the 1330th Air Base, directing airlift "over the hump," and later served as Director of Operations, then as Chief of Staff, India-China Division, ATC. Other assignments have been as Commander, 503d Special Mission Group, National Airport, Washington, D.C.; as student, Air Force Institute of Technology, Wright-Patterson AFB; with the Reactor Development Division, Atomic Energy Commission, Washington, D.C.; as Deputy Commander, 322d Air Division, 1955; Vice Commander, Air Photographic and Charting Service, Orlando AFB, Florida, 1957; Vice Commander, 314th Air Division, South Korea, 1963–64; and Senior Air Adviser to the Pennsylvania Air National Guard, Eastern Transport Air Force (MATS), until his present assignment in April 1965.

LIEUTENANT COLONEL DONALD R. CURRIER (M.B.A., University of Chicago) is a student at the Air War College. He entered the service in 1942 as an aviation cadet and served as a B-24 navigator with the Fifteenth Air Force in Italy. After the war he completed his education in 1948 and worked in private industry as a chemical engineer until his recall to active duty during the Korean War. His assignments during the last 14 years have been in research and development with the Air Research and Development Command, Air Force Systems Command, Office of Aerospace Research, and as Assistant for Plans and Programs, Air Force Office of Scientific Research, Washington, D.C.

LIEUTENANT COLONEL HENRY SCHEINGOLD (M.S., Air Force Institute of Technology) is Chief, Supply Division, Directorate of Materiel, 322d Air Division (MAC), Chateauroux Air Station, France. While serving as a B-17 bombardier with the Eighth Air Force in August 1944, he was shot down over France and was a prisoner of the Germans for a week before escaping during an air raid. Recalled to active duty during the Korean War, he served as a unit supply officer at Keesler AFB, Mississippi, from August 1950 until his assignment to Kadena Air Base, Okinawa, where from 1953 to 1957 he was successively Squadron Supply Officer, 30th Bomb Squadron, Wing Supply Officer, 19th and 307th Bomb Wings, and Group Materiel Officer, 18th Fighter-Bomber Wing. He flew as a B-29 aircraft observer. Other assignments have been as Base Accountable Supply Officer, 56th Fighter Group, O'Hare International Airport, Chicago, 1958-59, and at Kincheloe AFB, Michigan, 1959-61. After attending the University of Omaha under Operation Bootstrap and the Advanced Logistics Program at AFIT, he joined the 322d Air Division in August 1964.

CAPTAIN WALTER W. WEISBECKER (A.B., University of Pittsburgh) is a deputy combat crew commander, Strategic Air Command, McConnell Air Force Base, Kansas. A writer of both fiction and nonfiction, Captain Weisbecker has been a frequent contributor to the national magazine and book market. In industry from 1958 to 1960, he was a financial analyst of corporations and cartels and received a national award for marketing excellence by Dun and Bradstreet, Inc. Captain Weisbecker is a graduate of the Squadron Officer School, Air Command and Staff College, and Air Force Missile School.

DR. WILLIAM S. COKER (Ph.D., University of Oklahoma) is under contract with the Aerospace Studies Institute, Air University, to write a history of the Eighth Air Force in World War II. He entered the Army Air Corps in 1941, attended radio and aerial gunnery schools, and then compiled nearly 2500 hours as a crew member on B-24's, B-17's, and B-29's during combat tours in the North Africa—Italy and China-Burma-India theaters. Since his retirement from the Air Force in 1962, Dr. Coker has taught history at the University of Oklahoma and at Kansas State University and has published articles in several historical journals.

DR. CHESTER V. EASUM (B.A., Knox College; Rhodes Scholar, B.A., M.A., Oxford University; Ph.D., University of Wisconsin) is Visiting Professor, Department of History, Hiram College, Ohio. Dr. Easum taught at Culver Military Academy, 1921–27 and 1928–30, and at the University of Wisconsin, 1927–28 and from 1930 until he became emeritus professor in 1964. As an Infantry lieutenant, he served in Germany during World War I and with the Army of Occupation. He returned to Germany (1936–37) to conduct research in Berlin and Munich. From 1954 to 1956 as a U.S. Cultural Attaché he served as contact between the U.S. High Commissioner to Germany and the German universities, and as chairman of the binational committee that administered the Fulbright program.

DR. GENE M. LYONS (Ph.D., Columbia University) is Professor of Government and Director, Public Affairs Center, Dartmouth College. After graduating from Tufts College in 1947, he received a *License ès Science Politique* at the Graduate Institute of International Studies, Geneva, in 1949. He worked with the International Refugee Organization from 1948 to 1952 and with the United Nations Korean Reconstruction Agency from 1952 to 1956. He has been at Dartmouth since 1957, and in 1963 was appointed Orvil E. Dryfoos Professor of Public Affairs. Professor Lyons was coauthor with Professor John Masland of *Education and Military Leadership* (1959); author of *Military Policy and Economic Aid* (1961); coauthor with Professor Louis Morton of *Schools for Strategy* (1965); and author of numerous contributions to professional journals and other publications. He is presently studying strategic command and organization of international forces under a Carnegie Corporation grant.

AWARD

The Air University Review Awards Committee has selected "The Joint Chiefs of Staff and Defense Policy Formulation" by Major Lawrence B. Tatum, USAF, as the outstanding article in the May-June 1966 issue of *Air University Review*. Major Tatum's article has also been designated the outstanding article for fiscal year 1966.

ATTENTION

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