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force-structure development

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the cover

In the United States, force-structure planning for air dates from 1909, when U.S. Army Specification No. 486 called for a "flying machine" capable of carrying two people for an hour at a speed of 40 miles an hour. The contract for $25,000 went to the Wright brothers, who performed some of their developmental testing at what is now Maxwell AFB, Alabama. Lieutenant Colonel Edward Stellini examines broad force-structure planning in its historical perspective and in terms of more current considerations, problems, and issues.

FORCE-STRUCTURE PLANNING

Considerations, Problems, and Issues

LIEUTENANT COLONEL EDWARD STELLINI

THERE is a familiar ad in one of the service publications which goes: "We have an Air Force so that we can have an Air Force." The implication of these words has much meaning to the American public, especially to members of the armed forces. To one particular group of Americans, this phrase has an added meaning, for it is the task of that group to formulate the plans, conduct the studies, advocate the positions, and make the decisions which result in the acquisition of the weapon systems that make the Air Force the powerful force it is. This group, hereafter referred to by the generic term *force planners,* consists of the staff officers, the analysts, and the hierarchy of decision-makers whose responsibility it is to develop the USAF force structure.

A more explicit reason for needing an Air Force is that it provides a convincing deterrent to the spread of international Communism—a long-range goal of Lenin and his followers since before the Wrights flew their first airplane. In 1905, Lenin, declaring the need to replace the standing army with a people's militia, wrote:

> Let the hypocritical or sentimental bourgeoisie dream of disarmament. So long as there are the oppressed and the exploiters in the world, we must strive not for disarmament but for universal popular armament.[1]

In 1919, some 16 months after the successful Bolshevik Revolution, Lenin warned that the ruling class would never surrender its power to the oppressed and that a standing army, instead of a people's militia, was necessary. In a statement to the Eighth Congress of the All-Russian Communist Party, he stated:

> We have always said: "There are wars and wars." We condemned the imperialist war, but we did not reject war in general . . . We live not only in a state but in a system of states, and the existence of the Soviet Republic side by side with imperialist states for a protracted period of time is unthinkable. In the end, one or the other will be victorious. Until that end is at hand, a series of most frightful clashes between the Soviet Republic and the bourgeois states is inevitable.[2]

In the years since Lenin's prediction, the United States has emerged as a world leader, and the U.S. Air Force has become the strongest air power in existence. In recent years, however, there has been an apparent decline on the part of the American public to support our stated commitment to assist governments threatened with Communist subversion; and consequently our position of leadership in the future is uncertain. Twenty years ago the majority of the American public spoke out as one against the spread of international Communism; today, the question is whether a significant portion of that public perhaps supports the Communist philosophy or at least considers Communism a lesser threat than in earlier days. One wonders about this when noting that there are some

in the street who defiantly carry the enemy's flag and some in the Congress who call for decreased defense expenditures and a policy of isolationism which could well encourage the spread of Communism. In the name of social reform and an improved standard of living for the underprivileged, there is an increasing demand for withdrawal of military forces from Europe as well as from Asia and for a reorientation of national priorities.

In 1958, A. F. K. Organski predicted in his book *World Politics* that the American public would not be willing to exchange its standard of living for its leadership position in the world:

> Often a nation must choose between guns and butter, and the choice it makes will shed great light upon its national goals. The United States is so wealthy that this choice has never been forced fully upon it, but we can hazard the guess that if she were compelled to choose between world leadership and the American standard of living, she would choose the standard of living.[3]

Twelve years later his prediction seems to be bearing fruit. Let us trace the trend in our budgetary policies since World War II and the associated impact on defense appropriations. After reviewing some of the economic and political considerations that determine budgetary policy, we will look at the Nixon-Laird framework for force-structure decision-making, then discuss the force planning methods of the past and the problems and issues of the future.

Economic Considerations

The factors affecting the Department of Defense portion of the annual budget can generally be classified as internal and external. That is, certain conditions determining the present and future national economic picture, such as the demand for consumer goods and public services, can and will affect the size of the DOD budget; and so will international conditions, such as East-West negotiations, disarmament conferences, and the temperature of the cold war.

Since the end of the Korean War the amount spent annually in the United States for defense, although not stated as a matter of policy, has been preordained by the presiding Chief Executive. In other words, a "dollar limit fiscal policy" has been a reality for many years.

Apparently concerned about the decreasing military budget during the first three years of the Eisenhower Administration, Senator Richard B. Russell, Chairman of the Armed Services Committee, decided in February 1956 to appoint a committee on the Air Force:

> . . . to examine into the condition and progress of the Department of the Air Force and ascertain if present policies, legislative authority and appropriations are adequate to maintain a force capable of carrying out its assigned missions.[4]

In 1957 the report of the Subcommittee on Armed Services, chaired by Senator Stuart Symington, stated in its findings:

> No witness disputed that the United States must make whatever expenditures are necessary to give us the military strength needed for survival.
>
> In general, there are two ways in which the problem of balancing defense needs against fiscal requirements can be approached.
>
> One way is to ascertain essential defense needs and then see if the funds can be made available to meet them. The other is to predetermine, as a matter of fiscal policy, a dollar limit for defense expenditures; and thereupon refuse to satisfy any defense needs that cannot be compressed within that limit.
>
> The testimony shows clearly that during recent years the latter approach has been followed . . . .[5]

The Eisenhower Administration had repeatedly expressed anxiety about overspending

by the national government, and fairly tight and arbitrary budget ceilings were the result. But, with the advent of Soviet satellites, there were some relaxations during 1958, especially in R&D expenditures.[6]

With the new administration in 1961, a revolutionary change in the federal budgetary process came about. The most important change was the emphasis on cost effectiveness. In broad statements of policy the Kennedy Administration also included bolstering U.S. ability to conduct conventional and guerrilla warfare and strengthening strategic nuclear forces. At the same time, the administration, along with seeking to improve military effectiveness, made a series of management reforms, which was an effort to increase effectiveness and efficiency across the board. The defense budgeting policy established by Kennedy called for (i) developing the force structure necessary to meet our military needs without regard to arbitrary budget ceilings, and (ii) procuring and operating this force at the lowest possible cost.[7] With the new program each proposal was to be looked at in terms of its five-year potential, and projects would no longer get started because they had low first-year budgets.

The ideas expressed in the classic volume *The Economics of Defense in the Nuclear Age* were put into practice in the form of a management system called *Planning-Programming-Budgeting*. One of the authors, Charles J. Hitch, who was selected to be Assistant Secretary of Defense (Comptroller), in discussing how much should be spent on defense in deference to other programs, stated:

> Making the choice should be viewed as a problem of getting the most out of resources, not as one of hunting for a tablet on which the right budget, requirement, or doctrine is inscribed. . . . If taken literally, the questions, "What can we afford for defense?" and "What are our needs?" are the wrong ones to ask in deciding upon the size of the defense effort. The right questions is, "How much is needed for defense *more than it is needed for other purposes?*"[8]

In spite of the allegation that arbitrary budget ceilings did not exist, the management practices established by Secretary of Defense Robert S. McNamara did, in fact, serve the purposes of a budget lid. As an example, in 1962 a budget of $67 billion was submitted to McNamara. After he reviewed it, the services' requests were trimmed to less than $54 billion.[9] The difference, perhaps, stems from the fact that the Joint Chiefs of Staff (JCS) were recommending forces for two major and one minor conflict, while the Office of the Secretary of Defense (OSD), on the basis of systems analysis studies, was recommending a budget which appeared to be more in line with what was politically acceptable.

Political Considerations

It appears that the size of the defense budget is really a political, rather than an economic, consideration. According to John Kenneth Galbraith, the "minimum" standard of living is always the existing one, and no administration or Congress that is interested in being re-elected is likely to propose any substantial reduction in that standard of living.[10] Furthermore, the size of the budget appears to be pretty much what the President wants it to be. Congress traditionally tries to cut his requests, but even when at times it has increased them the President usually has his way. For example, in the late forties President Truman requested a 48-wing Air Force, but Congress appropriated for a 70-wing Air Force. The President simply did not spend the additional money provided.[11] History proved him wrong, for in only two years the additional aircraft would have been more than welcome.

Congressional influence on the defense budget is evident in the preparation. The President, on the other hand, has direct influence on the budget and also has more information

to go on in regard to both foreign and domestic matters. He also is the only one who can synthesize the views of the Treasury, the nondefense claimants on the budget, and the armed services. The armed services, represented by the Department of Defense, must determine the "needs" to defend the country; the President, with his staff, must appraise these requests in the light of competing claims on the country's resources.[12] If the DOD feels $70 billion is necessary to provide adequate security and the Treasury says anything more than $50 billion will cause major economic problems, it is up to the President to risk *either* insecurity *or* a dangerous economy or compromise and risk *both*.

Not only is the size of the defense budget a function of high-level policy but so also, to a large extent, are the decisions on what weapons will be bought.

According to Dr. Alain Enthoven, former Assistant Secretary of Defense (Systems Analysis), the question of the number and type of weapons required is not strictly a military problem but is, in fact, a defense policy problem. Since defense policy also involves political and economic factors, the size and composition of forces have a direct influence on foreign policy as well as a major impact on domestic policy. Since the problem is not just a military one, it follows that these decisions must be made at a higher level—a level where all implications are known and understood. These are national security policy decisions, and they are based on the interaction of values, on the one hand, and costs and effectiveness of military forces and weapon systems on the other.[13]

Other political considerations which are a reality and affect force planning choices are those that involve service positions, roles, missions, and vested interests. The conflicts that result from these considerations are generally resolved within the new Planning-Programming-Budgeting System, to be discussed later.

A Budgetary Constraint

When General Eisenhower achieved the ultimate rank of Commander in Chief, he began to take a critical view of the defense budget. And, although not explicitly saying so, he did set arbitrary budget ceilings for national defense. During the Kennedy and Johnson Administrations, the guidance to Secretary McNamara was to buy what was needed at the lowest cost, but there was also an unspecified budget lid. Under all three administrations, the advice of the JCS on strategy, threat, risks, and the military forces required to cope with the threat did not appear to play a significant role in determining the defense budget.

Under the Nixon Administration, a budget ceiling approach is being used again. Unlike his predecessors, however, President Nixon has stated that such a limit does exist. Now, instead of sizing forces to deal with *two* major and *one* minor nonnuclear war (which was never realistic; some estimate it would have cost $100 billion in 1968), the objective is to size the force to fight *one* major and *one* minor war in the event the fundamental strategy to deter aggression fails.

Along with the changes in the budgeting approach and the national strategy, there has also been a change in emphasis on the views of the JCS in developing the defense budget. With the increasing cost of weapons and decreasing budget levels, the JCS will still not be able to buy all they want within the fiscal limits set. However, they will come much closer to meeting our reduced military objectives. The JCS are now getting specific guidance on national objectives and budget dollars, and they can balance their force requirements to match this guidance. They know in advance the relative allocations to national security and other national programs.

It seems ironic that at a time when our potential enemies are getting stronger and more adventurous we are tending toward

lower levels of national defense. What seems to be happening is that we are seeing the fulfillment of Professor Organski's prophecy—the American public appears to be choosing standard of living over world leadership. The demand in the Congress, especially in the Senate, is for a reorientation of national priorities. The challenge implied to the planner was aptly expressed in June 1968 by James R. Schlesinger, Assistant Director of the Bureau of the Budget, in his keynote address to the Military Operations Research Symposium:

> This alteration in national priorities is one that you may approve or you may disapprove. You may seek to reverse this trend. Let me observe parenthetically that I hope you will all join with us in the Administration in rejecting the more extreme attacks on our military establishment and national security objectives. Nonetheless, the shift in national priorities is a reality, and we shall have to adjust to it. It implies, for example, that Defense appropriations will have to be examined meticulously in terms of the trade-offs between Defense and non-Defense objectives. It implies, to borrow the jargon of economists, that the elasticity of demand for defense activities has increased. Military requests face tougher scrutiny, not easy passage. This should imply pressures and incentives for greater efficiency. It certainly implies that military requests face the give-and-take of ordinary budget processes, from which the military has been partially exempt in recent years.[14]

the new PPBS: a framework for decision

One of the first tasks that Secretary of Defense Melvin R. Laird undertook after assuming office was to revamp the Planning-Programming-Budgeting System (PPBS), initiated by Secretary McNamara, to conform to the new strategy and budgeting guidance. By definition the PPBS is an integrated system for establishing, maintaining, and revising the Five Year Defense Program (FYDP) and the DOD budget.[15] It is a continuous sequence of activities and decisions which integrates strategy, forces, and defense dollars into the President's budget.

The cycle starts in October, about the time the previous years' defense budget estimates have gone to the Budget Bureau. In the form of the Joint Strategic Objectives Plan (JSOP), the JCS provide OSD with their statement on national security and military objectives based on their appraisal of the world situation eight years ahead. On the basis of decisions by the National Security Council and the JSOP, the Secretary of Defense establishes strategic guidance on what he feels are the world military threats, the forces required, and the fiscal limitations on the amount of money that would be available for buying these forces.

The Joint Chiefs, given the budget ceiling and the strategic plan, tell the Secretary what they can and cannot buy and the associated risks. This estimate is given in the form of the Joint Forces Memorandum (JFM), which includes the five-year program costs and associated manpower requirements furnished by the services.

In June the services provide OSD with their recommendations for the forces, manpower, and costs developed on a cost-effectiveness basis, within the fiscal constraints established, in the form of a Program Objective Memorandum (POM). After some dialogue between the services and the OSD staff, a "major force issues" meeting is held with the Secretary of Defense, the Chiefs, and the service Secretaries. Dollars, forces, threats, and risks are "balanced."

By midsummer the Secretary of Defense issues Program Decision Memorandums (PDM). In October, the services submit their initial budget proposals to OSD. Final service issues are resolved, Program Budget Decisions (PBD's) are issued, and the FYDP is updated. In December, the Office of Management and Budget (OMB) wraps up the defense budget and sends it to the President, who then makes decisions resolving final issues raised by JCS and the OMB.

allocation to services and fiscal guidance categories

The organizational and functional framework within which forces will be structured is shown in Figure 1.[16] Within this framework the OSD planner is faced with the following questions:

What portion of the defense budget should be allocated to

—each service and to each defense agency?

—each of the fiscal guidance categories: strategic forces, general purpose forces, research and development, intelligence and security, other nations' support, and others?

An OSD planner might ask: What is the best way to allocate the defense dollars available among the fiscal guidance categories? Theoretically, the solution is simple. What we want to do is to allocate dollars to each category so that any reallocation of these dollars does not increase the total military worth achievable. Our measure of merit, military worth, is a nebulous thing and cannot easily be defined. It probably can best be described as "total national defense."

The military worth functions are shown in Figure 2 as curves that begin at zero dollars and increase as dollars are added. These functions curve downward, implying decreasing marginal returns; i.e., the more we buy of some capability, the less the incremental amount purchased is worth. Interpreting these curves, we have an optimum allocation of dollars when the derivatives at $a, b, \ldots, n$ are all equal; and when the total dollars expended equal the sum of $A, B, \ldots, N$, we have maximized military worth.

This discussion, of course, is theoretical, since the shape of the military worth functions were arbitrarily drawn. In practice, these curves are not well defined. It is likely that in actuality they would not be smooth, continuous curves, nor is the formulation of each curve independent of the remaining curves. In fact, the curves cannot be explicitly defined by mathematical analysis. The equations of the curves must be modified to take into account the insight gained through analysis, military judgment, political considerations, and other intangibles.

What happens in the real world is that the precedents of previous years' allocations strongly influence subsequent years' allocations. The trade-offs in dollars are made at the margin; that is, new systems replace the old when it is concluded that the trade-off will result in a net increase in military effectiveness. The trade-offs may or may not cross fiscal guidance categories or service lines. In either case, trade-offs are made within the framework of the PPBS.

Force Analysis and Planning since World War II

Now that we have looked at the framework within which the force planner must work, let us take a look at the history of force analysis and planning in the Air Force, particularly since World War II. Then we will go on to discuss some of the planner's future problems and some of the issues he must address.

In 1909, the U.S. Army announced its Specification No. 486, for a "flying machine," to the general public:

> The machine is to fly 40 miles an hour, be able to carry two people whose combined weight would not exceed 350 pounds, and be able to stay in the air for one hour . . . be capable of landing and taking off, without undue delay, and also be capable of dismounting and loading on an Army wagon to be transported . . . permit an intelligent man to become proficient in its use within a reasonable length of time.[17]

Forty-one bids were received, three of which were taken seriously. Contracts were offered to all three bidders, but shortly thereafter two withdrew. The Wright brothers then were offered $25,000 to deliver the first military airplane in the United States.[18]

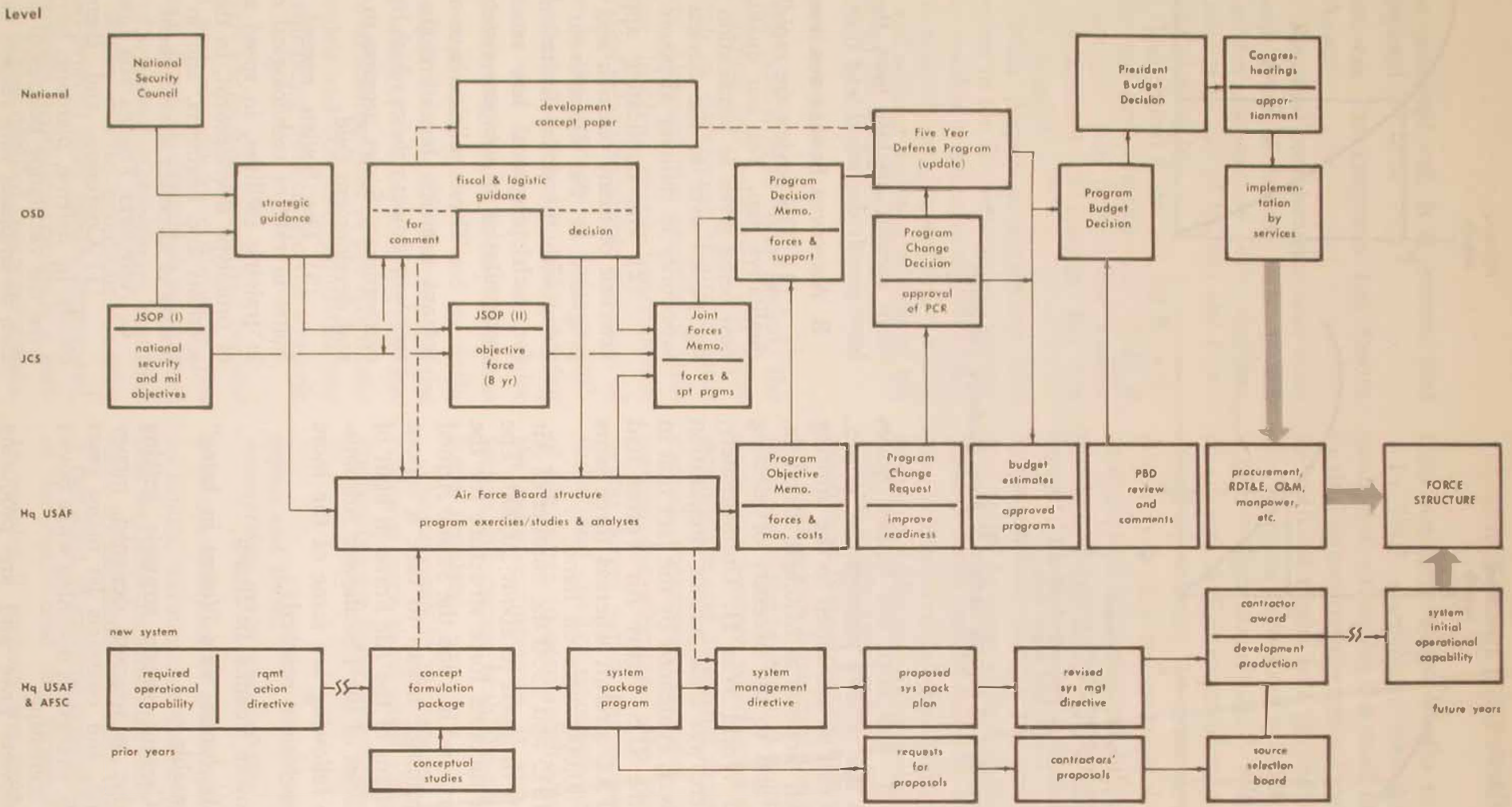
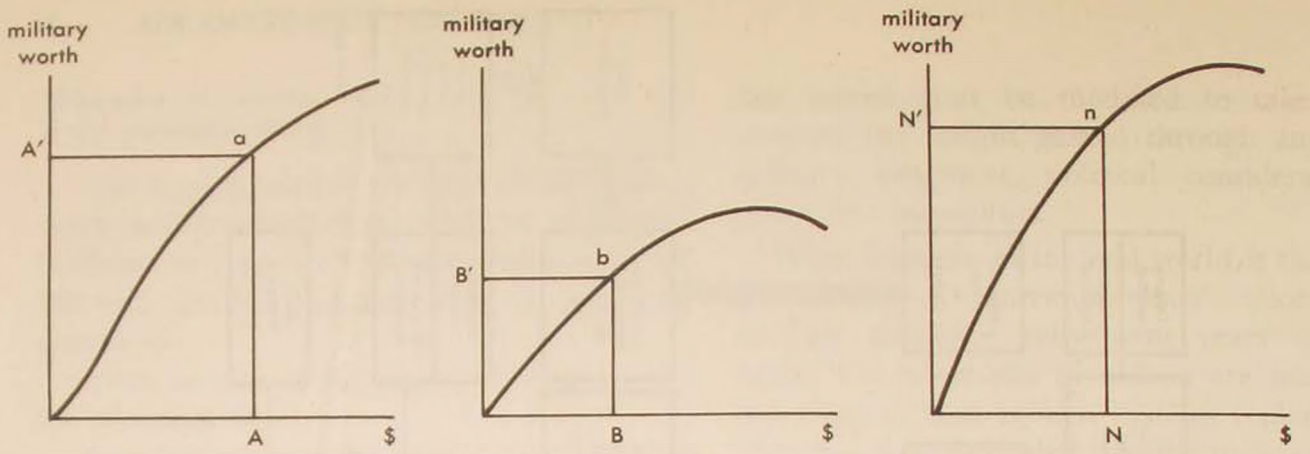


Figure 1. The route to forces: Planning-Programming-Budgeting System and Concept Formulation, Contract Definition, System Acquisition



Note: One graph for each fiscal guidance category for each service and defense agency, where derivatives at a, b, . . ., n are equal:
A' + B' + . . . + N' = Total national defense
A + B + . . . + N = Total defense budget

Figure 2. Allocation of defense budget to fiscal guidance categories

Two world wars later the United States had become the world's strongest air power. This growth can be attributed to the untiring efforts of such pioneers as Mitchell, Doolittle, and Arnold and to the necessity of meeting the needs of World War II. Unfortunately, however, there was little serious preparation before that war, evidenced by the fact that in July 1941 the U.S. Army Air Forces had fewer than 7000 aircraft whereas three years later nearly 80,000 were on hand.[19]

Between 1945 and 1950 the number of Air Force aircraft dropped to about 20,000. The Korean War dictated force structure for the next few years, and in 1956 the Senate Armed Services Committee began to take a serious look at the status of the Air Force in light of the fiscal policies of the Eisenhower Administration. The following are some of the more important conclusions reached:

A. Airpower Forces In Being

(1) In future wars "forces in being" are indispensable.

(2) Current strong strategic striking power is due to weapons designed, money appropriated, and contracts let many years earlier; U.S. strength is declining while Soviet strength is increasing.

(3) Soviets have and are producing more combat aircraft than the U.S.; they have greatly decreased lead time.

B. Airpower Forces for the Future

(1) The Soviets are rapidly closing the qualitative gap. Yet, our qualitative lead is now being given as justification for our having passed over to the Soviets quantitative superiority in military airpower.

(2) The duplicating approach characteristic of many research and development programs in the Department of Defense, along with the dollar limitations established for such programs, has retarded needed modernization of weapons systems.

These policies have retarded important scientific breakthroughs. They contrast with Soviet policies which have produced extraordinary Soviet progress in the research and development field.

(3) The Soviets exceed the United States in rate of technological development, in training facilities, in speed and quantity of prototype development, in the training of scientists and engineers, and in many other phases of airpower development.

C. Airpower Forces for Limited War

(1) Confusion and therefore inefficiency in defense planning have developed from the vacillating policies of first emphasis then de-emphasis with respect to limited war

as against unlimited war. It is essential that we be prepared for both.

D. AIRPOWER PREPAREDNESS AND FISCAL POLICY

(1) Financial considerations have often been placed ahead of defense requirements, to the serious damage of our airpower strength relative to that of Russia; and hence to our national security.

(2) The United States has the capacity to produce and maintain airpower which is relatively stronger than that of the Soviets; but the Department of Defense has not utilized this capacity.

(3) With proper programming and administration in the Department of Defense, it would be possible to maintain air supremacy over the Soviets without jeopardizing a sound economy and without imposing additional tax burdens upon the people.[20]

wargaming and computers

During the post-Korean War period, the use of wargaming and computers was especially evident in developing strategic force requirements. Although the analysis of strategic warfare involved many uncertainties, the planner had relatively simple measures of effectiveness in the concepts of damage limitation and assured destruction. Not having had a nuclear war from which to acquire data, the planner was forced to rely on operational and weapon test exercises and on mathematical models to compare the capabilities of strategic weapon systems and develop desirable force structures. And to this day mathematical models and computer-simulated war games are still being used to size the strategic force.

In the early sixties wargaming had become an integral part of most force studies in JCS and Hq USAF. Particular emphasis was placed on the use of wargaming techniques in studies of tactical theater conflict situations. Gaming methods had evolved from grossly aggregated, one-man exercises providing results in a matter of days to highly detailed computer simulations requiring many months to complete.

In 1965 wargaming was not used as a method of estimating the USAF objective force tactical fighter requirements. Instead, a simple-to-use hand model was devised that consisted of a series of nomograms, much like those in a pilot's flight handbook.[21] With this model, total tactical fighter requirements were estimated by entering the nomograms at various points with selected parametric values such as sortie and attrition rates, kill ratios, and the number of various kinds of targets to be defeated. This highly stylized model lacked much of the sophistication of the war game, but it was useful to some extent in that it gave the planner some insight into the interrelation of the various force-sizing planning factors without the need for an analyst to interpret data.

This simple approach served as a basis for subsequent tactical force-sizing studies by the Air Staff, which broadened the data base and the scope of the problem. A more recent major study was TACFAN, which used a combination steady-state and two-sided dynamic model.[22] TACFAN supposedly provided an analytical method for estimating the size of tactical fighter forces within the context of various threat and conflict situations and the ability of the forces to accomplish the objectives of the JSOP contingencies. It also analyzed the factors influencing both the size and mix of forces required.

The rationale in TACFAN was used for USAF objective force sizing until 1969. Now, other approaches are being investigated.

inputs and threat assumptions: major uncertainties

As an indicator of the sensitivity of results to inputs, TACFAN concluded that when the best weapons are available only *half* the time, force requirements are more than *doubled*. It is this kind of extreme sensitivity to the value of the inputs used that causes force planners to wonder if perhaps the time, money, and

effort that go into developing complex computer models are well spent. Would it not be more productive to direct these resources toward minimizing some of the uncertainty involved in the inputs or at least toward trying to understand better their impact on the results of analyses?

Another shortcoming of force-sizing studies, including TACFAN, has been the explicit statement of the threat against which force levels are derived. These studies invariably include a specific target array (number and kinds of targets) that must be defeated in some specified time. If the decision-maker believes the threat, he may believe the results of the study; if he does not agree on the threat, then he cannot logically accept the force level recommended.

Recognizing the major impact which the inputs and the hypothetical threat have on the results of force-level studies, Major General Glenn A. Kent, shortly after assuming the position of Assistant Chief of Staff, Studies and Analysis, Hq USAF, cautioned his personnel that the purpose of a study is to develop new truths and provide new illumination for consideration by the decision-maker.* In other words, it is more beneficial to show the decision-maker how an input, such as the attrition rate, drives the size of the force than to try to tell him what that force size should be. On the relation of threat to force level, General Kent went on to say:

> Our purpose in force level studies is not to determine the required *level;* the threat dictates the required level, and the threat input is always open to question. Hence, our purpose in force level studies is always to evaluate the effectiveness of alternative force levels, and to provide the decisionmaker a range of options. However, once given a budget level, we can determine preferred mixes based on effectiveness criteria.[23]

In the strategic context, the existence of uncertainties in strategic force exchanges has not deterred analysts from modeling the major elements of strategic warfare. Since the force interactions involved are relatively simple and empirical data are lacking, mathematical models are considered an appropriate means of sizing the strategic forces.

In the tactical context, however, we have extensive empirical data: the results of three wars. Although data are plentiful, contradictions often exist. Consequently, the job of communicating the results of analyses is difficult and hazardous. Furthermore, the abundance of data available and the complex interactions involved in tactical warfare have usually led to the rejection of simple models because they lack realism and rejection of sophisticated ones because they are too sensitive to the inputs and the threat assumptions used. For these reasons tactical force sizing has been based on analysis to some extent but also on the decision-maker's judgment.

Force Structure—
Problems and Issues

The basic elements in force-structure decision-making are the threat, the state of the art in technology, time, and cost. A weapon system is developed to serve a certain military strategy that meets the enemy threat. Weapon developments are limited by the existing stock of technological knowledge. But as time passes, technology advances, prompting the development of new weapons. Cost enters the picture in that the decision-maker, faced with many alternatives, must select the best choice of weapons to meet the threat in the light of limited human and physical resources.

To help him make the best choice, the decision-maker relies on the systems analyst. The analyst explores alternative courses of action, their cost, and their effectiveness. He presents them to the decision-maker, who brings value judgments to bear, rejects some alternatives, makes decisions, and then asks

* For more from General Kent on this subject, see his article entitled "Decision-Making," page 62, in this issue of the *Review*.

for more alternatives within the framework established by decisions already made.[24]

As stated earlier, the term *force planner* includes a variety of persons who become involved in developing force structure. There are the operations analysts who deal with the detailed problems of weapon system effectiveness, the cost analysts who try to predict future years' costs, the systems analysts who look at the integration of all the force structure elements, the staff officers who incorporate analysis into the organizational framework for decision-making and make force recommendations, and the decision-makers up the line who decide on the force structure.

state of the art of force-structure studies

Since the development of force structure is heavily influenced by the work of the analysis community, it is interesting to note the consensus of the Military Operations Research Society regarding force-structure studies. In June 1969, the 23d MORS Symposium convened at West Point, New York. The Working Group on Requirements for General Purpose Forces reached the following conclusions or points of agreement:

- The concept of determining force requirements within budget constraints, given adequate fiscal and mission guidance, is a workable approach.
- Looser control by OSD will allow the services greater flexibility in force structuring.
- Without adequate guidance in terms of success criteria, strategic objectives, and dollars, there is no way to determine the forces required to meet a particular threat. The problem is compounded by the lack of effective models to determine the more complex or higher echelon force levels.
- Some of the more significant problems in force analysis are data collection, validation, and evaluation and the value of using data derived from experimental tests as opposed to analytically derived historical data.
- Model work and parameter study should continue. The sensitivity of models to input parameter changes is particularly important.
- Because of their generalized nature, use of Lanchester equations is questionable. They are of use primarily in fixed-outcome situations to analyze the effectiveness/attrition of alternative systems/forces.
- The key force analysis problem is the measurement of the effectiveness of units and weapon systems. Continued investigation is necessary.[25]

the planner's problems

We have now looked at the framework in which force-structure decisions will be made and the general conclusions of an august group of analysts regarding the state of the art of force-structure studies. Looking into the future, we find that the specific problems with which the planner will be most concerned are not the same for the near term as they are for the far term.

In the near term, the force planner has little flexibility regarding the force mix. The types of aircraft relevant for the period will be either in-being or already programmed. The planner's task will be to size the force by recommending phase-outs of old systems and by adjusting the quantities of new systems being phased in within the confines of a fixed dollar allocation.

In planning the tactical air program, the planner must try to find new ways to improve force effectiveness. One obvious approach would be to trade forces for more effective munitions, assuming the net result would be greater effectiveness for the same cost. Other approaches would be to trade forces for increased sortie-generation capability, or for increased mobility, or for decreased potential loss rates (e.g., aircraft shelters, penetration aids). The interrelation between these elements should be investigated in the context of pro-

jected budgets, lead times associated with procurement, and the risks inherent in force reduction.

In the far term, the force planner will be concerned with both force mix and force level. He will have to address mix and level in the context of strategy and the anticipated technological, economic, and political constraints. The uncertainties he will face will be exponentially greater in the far term.

The planner's most pressing problem in the far term will involve concept formulation and acquisition of follow-on tactical aircraft. The planned near-term tactical force consists of several aircraft types, some that have specialized missions (F-15, F-111, and A-X), others that have missions general in nature (F-100, F-105, F-4, and A-7). The F-100 and F-105 are now considered obsolescent, and by the end of this decade the technology designed into the F-4, our most abundant fighter, will be 25 years old. Given that the lead time from concept formulation to initial operational capability is about 8 to 12 years, depending on the state of the art of aircraft technology, the force planner should now be seriously considering concept formulation for the successor to the F-4, or perhaps an unmanned system.

Although these are not the only big problems the force planners will be faced with, they are probably the most important ones.

the issues

In the process of addressing these near- and far-term problems, the planner will have to spend considerable effort developing and refining his understanding of those issues that will have the greatest impact on force structure, particularly on the tactical force structure. His primary task will be to investigate the implications of these issues and come up with the force structure that most nearly meets our national security objectives. These are some of the major issues he must address:

- What are the relative value and military effectiveness of the various tactical air roles—close support, interdiction, counterair—in various threat areas within a range of conflict situations? In the light of Southeast Asia experience, there has been considerable controversy regarding the value of interdiction. Some say that in spite of the thousands of interdiction sorties flown, there has been minimal payoff; others argue that the effort being expended by the enemy to make up his losses, coupled with the decrease in men and materiel at the end of the pipeline, more than compensates for the cost of interdiction.

- What is the relative effectiveness of land, sea, and air forces in achieving the desired objectives of a nonnuclear conflict? Operational considerations concerning the allocation of ground targets in the battle area to either tactical air or land forces are particularly important. Equally important are the relative merits of land-based versus sea-based tactical air. Implicit in this issue are the potential trade-offs in weapon systems and defense dollars among the services.

- What are the pros and cons of specialized versus multipurpose aircraft? Is it best to have a large force of relatively inexpensive aircraft, or would a small force of sophisticated aircraft result in greater military effectiveness (assuming a fixed budget)? In the past we have tended toward the multipurpose, sophisticated systems, primarily because we were nuclear-war oriented. Today, in the light of Southeast Asia and the growing Soviet air and armor threat, we are turning to specialized systems such as the A-X, the F-15, and the F-111, optimizing for the close support, air superiority, and night/weather interdiction missions. At the same time we are also buying more versatile systems—A-7s and F-4s.

These issues are not new. They have been with the planner for years. The fact that they are closely related adds to their complexity. What is new to the planner is the reality of a declining defense budget. In some respects

his task will be simpler in that, with a fixed amount of money each year for the Air Force, he will be constrained to one less degree of freedom and therefore will be able to plan with greater certainty. On the other hand, the planner's task will be more difficult in that he will have to squeeze out more military effectiveness with fewer and fewer dollars. To insure the most effectiveness with the dollars available, the analyses upon which the planner will base force structure decisions must focus on (i) finding better methods for measuring force effectiveness; (ii) deriving more credible operational inputs, which strongly drive the results of analyses; (iii) clearly formulating the issues to be examined; and (iv) establishing reasonable options or alternatives.

WHEN asked why we *need* an Air Force, anyone who believes in democracy could reply: "So that we *can have* an Air Force." That Air Force should be one which will significantly contribute to our fundamental strategy of deterrence and, if deterrence fails, will best achieve our military objectives. It is the force planner's task to insure that we have the best Air Force money can buy.

Hq United States Air Force

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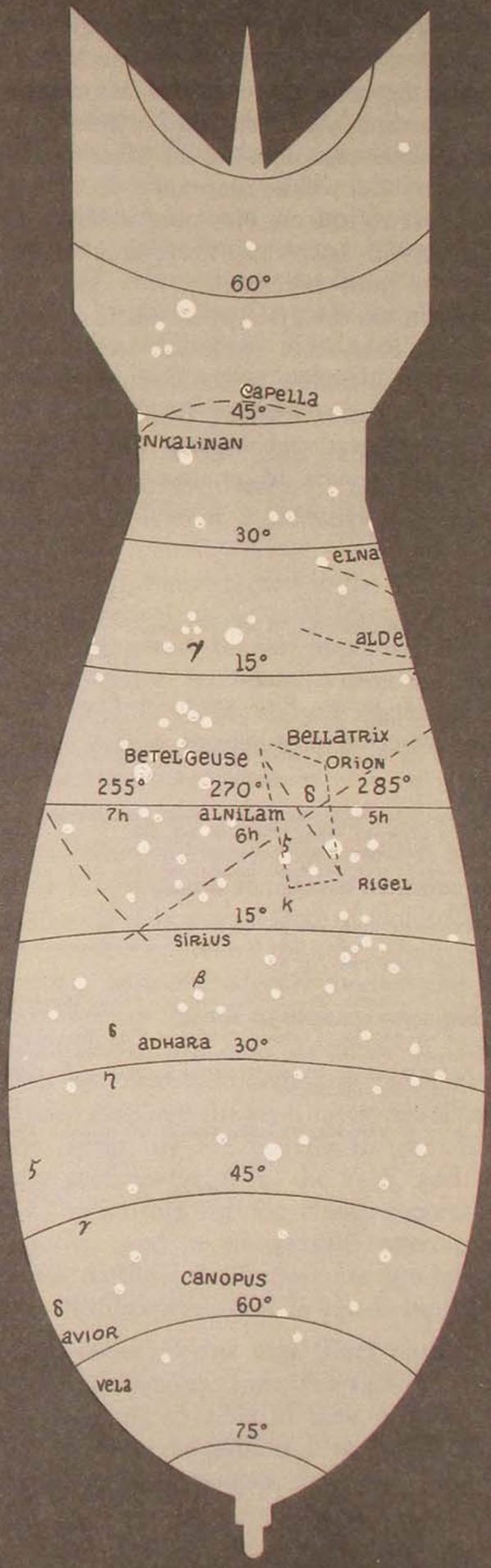
NAVIGATIONAL REQUIREMENTS FOR TACTICAL WEAPON SYSTEMS

COLONEL EDWARD H. CURTIS

THE weapon systems of the future are dependent on the research being accomplished today, and in many instances they will be dictated as a consequence of this research. An essential aspect of research relative to tactical weapon systems is tactical navigation for airborne weapon systems. A continuing requirement exists to provide the crew of the manned airborne weapon system with a navigational and/or guidance system that will insure the utmost in accuracy and reliability. If the factor of reliability can be achieved at the desired level, mission success can be viewed with a high degree of confidence.

The task of the designer of airborne navigation systems is immeasurably complicated by the demand for ultra high-speed airborne weapon systems with increasing quantities of complex electronic subsystems and a more stringent demand for reduced size and weight of components. Regardless of the infusion of these problems into the research and design effort, scientific and technological capability permits an optimistic view of an attainable goal. Evidence that the goal is in sight is underscored by the design trend toward microminiaturized electronic components, microintegrated electronic circuitry, hybrid circuit elements, new assembly techniques, and simplicity in lieu of complexity.



Coupled with these new design and manufacturing techniques is the increased emphasis on reliability and maintainability. It is my intent in this article to spotlight those functions of design and development that contribute to the major factors of reliability and maintainability. This approach is not intended to detract from the significantly prominent position of capability and performance of the airborne navigation system. Conversely, this approach is intended to complement those elements and at the same time explore the question of reliability and maintainability in such a way as to invite inquiry by the navigation system research, design, and development community of scientists and engineers.

Design and Developmnt of Airborne Navigation Systems

Since World War II the primary emphasis in the design and development of weapon systems has been dictated by the evolving requirement for increased performance capability. The airborne navigation systems have not been an exception to this philosophy. Accuracy and improved performance remain as paramount objectives in the design and development of present and future airborne navigation systems. However, coupled with the performance requirement are the factors of operational and maintenance requirements, which are as significant and essential to mission success as the pinpoint accuracy and capability that have been inherently stipulated. Changing times and changing mission requirements have generated new tactical operations and maintenance concepts that dictate a pattern of design and development of tactical weapon systems that is vastly different from that of the post-World War II era.

Space for location of equipment within an airborne weapon system continues to be at an absolute premium. The requirement for increased numbers of subsystems within the airborne weapon systems escalates at an unprecedented rate. These two factors, in conjunction with the accuracy, performance, reliability, and maintainability requirements in present and future tactical airborne navigation systems, establish the network of criteria that must guide the design and development effort of the industrial complex.

Significant strides have been made in the state of the art, but the scientific and technological surface has merely been scratched in terms of the goals that must be achieved in the design and development of these navigation subsystems. To accommodate the reduced space available for placement of the navigation system within the airborne weapon system, maximum miniaturization of components is mandatory. Platforms, gyroscopes, electronics, computers, and power-supply components must be designed for the ultimate in accuracy and performance but not at the expense of the size, weight, and minimized space available for these vital components. Neither can the navigation system designer succumb to the weakness of previous systems wherein, at best, reliability was questionable, mean time to failure was too short, and the ground support package far exceeded in cost and maintenance requirements those of the basic subsystem installed in the weapon system complex.

The evolution of techniques in the design of navigation systems to meet the confining requirements dictated by present and future tactical airborne weapon systems is in a state of restlessness. For example, research and development have moved ahead in the solid-state technology field. Present programs include work on photoconductive detectors, cadmium telluride devices, and optical transistors. Coupled with this research are the research and development programs producing new chemical processes to provide the setting for the new electronic elements. Successful research programs that produce new materials lead to their use in new devices and systems.

The using agencies can anticipate a host of

advantages as these newly developed design techniques find their way into more and more production items. The application of these techniques in the design of new airborne navigation systems for tactical aircraft will be especially significant. Computer programmed memory capacities can be more than doubled through the use of microminaturized electronics; weight and volume can be reduced by as much as 50 percent through the use of semiconductor integrated circuits; and reliability can be increased by a factor of as much as 75 percent. These newly designed components can and should provide for data processing, malfunction analysis, and function sequencing in addition to the airborne duties of control and/or guidance over a preplanned route to the destination of the weapon system.

The way is clear and the green flag is out to proceed full speed ahead in these investigative areas. It is incumbent upon both military and industrial elements to pursue airborne navigation system development programs commensurate with these evolutionary design and manufacturing techniques. As design and development progress, it is mandatory that the functions of system reliability and maintainability assume the same significant posture that accuracy and performance have occupied in the past. Experience reflects that these functions do not detract from each other. Conversely, they complement each other to achieve a common goal of mission success with a high degree of confidence.

Airborne Navigation Systems Reliability

Philosophically, the ideal approach to airborne navigation systems, from both the operational and maintenance viewpoints, would encompass a perfection of design and manufacturing techniques that would result in an infallible system operation. Needless to say, this is not considered an attainable goal within the present capability. Certain attractive aspects of this approach are available, however, and both the producer and the user have recognized this availability. Based on the substantial progress that has been recorded relative to developing increased weapon system reliability and maintainability coincident with system capability, maintenance concepts and requirements are being revolutionized.

The employment and integration of the design and development techniques already discussed inherently provide subsystem equipment items with substantially improved reliability. This favorable fallout is not sufficient, however, to meet the mission demands of tactical weapon systems. Particular effort must be exerted in unison by the industrial and military agencies to specifically design reliability into our tactical weapon systems.

The requirement for deployment and dispersal of tactical assets dictates a high degree of reliability in weapon systems and mobility in support equipment design. Such factors as limited rear-echelon support and limited personnel and skills, coupled with all-weather 24-hour operation, rapid turnaround, and a maximum combat-capability requirement, in effect identify and establish the importance of reliability in the weapon system subsystems. In the search for improved reliability in airborne navigation systems, several areas warrant detailed consideration, including

—refinement and employment in production of design techniques that are tuned to the functions of system reliability. The most important end result of microminiaturization is reliability.

—reduction of the number of interconnections required to complete system functions.

—the continuing requirement for components and subcomponents that provide an extremely high resistance to shock.

—the requirement to reduce thermal stress relative to electronic components.

—improved possibility for inclusion of redundant subsystems through incorporation of microminiaturization techniques.

—reduction of power requirements and the consequent reduced requirement for larger cooling systems.

—on-board built-in self-test and analysis functions, to provide checkout and sequencing and to reduce ground operating time on the system as well as ground support equipment.

—reduction and/or elimination of adjustments to be performed at the field level through designed systems reliability.

—substantial increases in the mean time between failures on all systems and subsystems. Many of the above approaches will contribute to this goal.

—continued aggressive engineering effort to advance and improve electromechanical design techniques and substantially reduce functional degradation and maintenance failures.

These itemized points of departure by no means constitute the whole range of elements that should be subjected to scrutiny when the factor of reliability is under examination. However, these areas are prime candidates for research, development, and refinement toward substantially increasing reliability in future tactical airborne navigation systems.

The present conflict in Vietnam has pointed up many problems in weapon system performance as well as in the areas of reliability and maintainability. We in the tactical weapon system maintenance program have been made acutely aware of these shortcomings, and we have been enlightened on significant improvements that can be achieved through research, design, and development.

Reliability/Maintainability

Although in this article I have taken a stand for reliability as a major design goal, the fact that reliability cannot be uncoupled from maintainability has been accepted as basic. In order to reflect this fact, I shall underscore some of the salient points that reveal the correlation of reliability/maintainability in any sound design and development program. Then I shall analyze in some detail maintainability as a major function of design.

Regardless of the urgency to design infallible reliability into our tactical airborne navigation systems, the restrictive element of economics still dictates the limit to which the designer is permitted to pursue this goal. Additionally, the state of the art in material and subcomponent development has not advanced sufficiently to be eliminated as an obstacle. Faced with these confining factors, the planners are charged with striking an acceptable balance between increased reliability and superior maintainability characteristics. The obvious approach to resolution becomes a trade-off of reliability factors for improved maintainability factors based on the restraints of the applicable set of criteria stipulated to the research and design community.

Substantial increases in the mean time between failures (MTBF) of components may very well outline a system of "removing and replacing" components, thereby eliminating the requirements for a field repair capability. Conversely, the cost of designing reliability of this magnitude into the navigation system could prove to be prohibitive, and a trade-off for field repair capability may be dictated in order to meet mission requirements. In either event, technological progress to date indicates that the bonus elements of both approaches can be coupled to achieve optimization.

Taking the economic element of the set of criteria, the designer may be enticed into presenting subsystems with built-in test features that show isolation of the anomaly to a module so inexpensive that it can be removed and discarded. Here again maintainability enters the picture, and the trade-off formula must be applied. Where either reliability or maintainability payoffs are achieved, a reduction in requirements for ground support equipment, personnel and skills, and complexity in the logistics support network is inherent.

When reliability and maintainability are welded together as a design goal in the devel-

opment of tactical airborne navigation systems, a host of advantages will accrue to the using agency. The crew's confidence in the equipment capability will be increased, utilization hours per month for the weapon system can be extended, support equipment and manning requirements both will be reduced, and spares support will be more easily managed.

Performance is a must, and maintenance is indispensable, but if the crew of the manned tactical weapon system is to deliver the payload on the target, the factor of reliability must be incorporated into the triangle. Success in arriving at and returning from the target may very well hinge on a reliable navigation system designed for reliable pinpoint accuracy.

Optimized Maintenance Through Design

Usually seventy-five percent of the maintenance effort is expended in isolating the malfunction to a manageable component, and the rest is devoted to fixing and returning the item to service, assuming that the component can be repaired at base level. Generally speaking, these percentages apply across the weapon system, including the navigation equipment.

A major complicating factor in the maintenance analysis process is the failure that occurs within the airborne environment but cannot be duplicated or identified on the ground. When this situation arises, neither the operator nor the maintenance technician can justifiably be criticized. During a flight performance, suppose the operator is faced with a function failure confirmed by either a presentation process or something else he has been trained to recognize. In order to call attention to this matter, he must provide the maintenance man with a write-up, which he expands by verbal description. The maintenance technician, armed with these data, his maintenance procedures, and the required items of test equipment, starts his analysis process. In a sequenced, step-by-step analysis utilizing his test equipment items precisely as directed, he fails to confirm the problem and in fact determines that the system functions perfectly during the ground check process. The missing factor is the relationship of system operator in the demanding airborne environment. Technology is presently at the threshold of solving this dilemma.

The road to effective maintenance of airborne navigation systems is presently paved with large quantities of sophisticated and intricately complex test equipment, highly skilled technicians, and long hours of employing proceduralized troubleshooting techniques. Resolution of these obstacles appears to be just over the horizon, and investigation of the problem is worthy of serious consideration. For example, it appears both economical and feasible to design the malfunction analysis, isolation to the module, and recording into the navigation system. This on-board capability can result from joint utilization of the navigation computer system coupled to recording and operator presentation devices.

With a system designed along these lines, several advantages will accrue to both the operator and the maintainer. First, the malfunction can be isolated, analyzed, and recorded in the airborne environment. Second, the operator can be presented with the problem immediately and offered alternatives to circumvent possible disaster. Third, the time required to identify and isolate the problem on the ground can be reduced to zero. These are only the primary advantages of such a system. Test equipment quantities can be drastically reduced, maintenance skill levels can be reduced, and the total number of maintenance personnel required will drop substantially.

The recommended on-board concept makes provision for insuring minimized maintenance with reduced amounts of aerospace ground equipment (AGE); effective fault detection, isolation, and analysis; logical maintainability; and maximum assurance of mission accom-

plishment. The recorded analysis data will provide the maintenance team with sufficient information to take corrective action without detailed fault-isolation procedures. This concept also would provide a more positive approach toward determining mission success capability and system reliability. The major advantage of this approach, however, is the dynamic analysis in the airborne environment. In most instances it is economically prohibitive to duplicate that environment—even approximately—in the ground test setting. If it is feasible from the economic point of view, the airborne environment just cannot be duplicated on the ground within other available resources.

The microminiaturization approach to airborne system design, in both the electronic and electromechanical areas, makes this concept of in-flight analysis and recording not only feasible but desirable and necessary. As the micro design techniques are more widely accepted, the function of fault detection and isolation to the lowest removable module will become exceedingly attractive. The cost of modules, through application to more systems, will be reduced to such a level that the remove/replace/discard concept for faulty items will become economical.

Although the emphasis here is on maintainability, a significant operator factor is associated with the plan for an on-board computerized fault detection, analysis, and recording system. The process of on-board fault isolation and recording must provide the operator an uncomplicated cockpit presentation of the results. A presentation of this type may very well afford him the opportunity to correct the problem in flight or take successful alternate courses of action. In addition to the operator presentation, it appears feasible to design into the system a maintenance presentation panel whereby a quick analysis of the problem may be effected and corrective action taken to insure minimum turnaround time in the combat environment.

Maintainability, although representative of quality control and first-class workmanship in production, is basically a product of design techniques and system reliability. The reduction of field-level adjustments, through consistently reliable operation designed into an airborne navigation system, is a must. As an example of the burden that is placed on the maintenance manager with the indiscriminate inclusion of field-level adjustments in a system,

An instructor at Mather AFB, California, using a mockup, explains the operation of the AGM-28 Hound Dog missile to a class of future navigator-bombardiers.

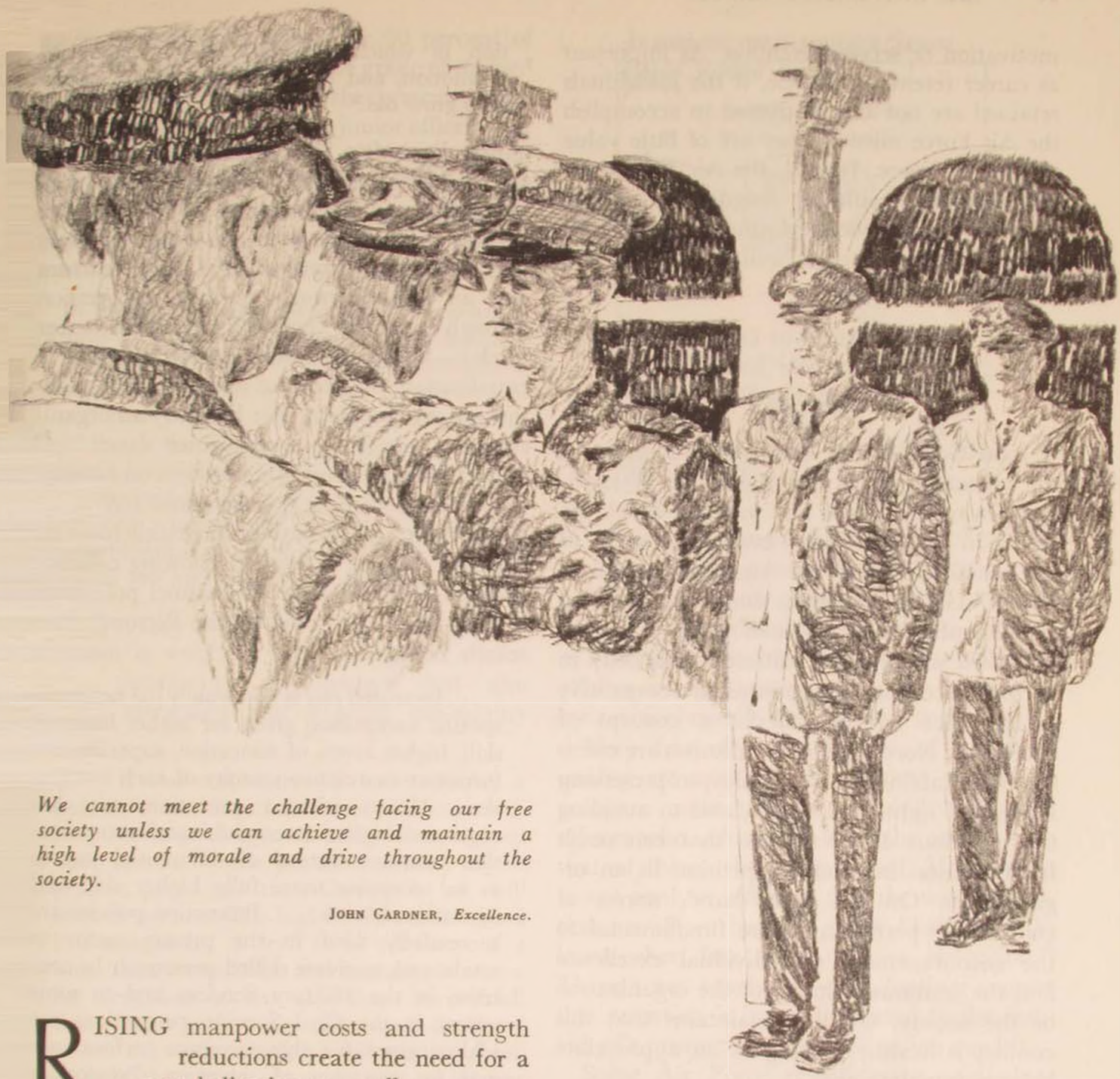
one radar set in one of the modern tactical weapon systems has approximately 100 field-level adjustments. Just imagine the complexity of the alignment task when components are replaced to correct a fault and a complete alignment of the system is necessary. The function of maintainability becomes obvious when viewed in this context.

With microminiaturization, more consideration should be given to accessible component location. In many instances several hours are now required literally to reach a component, remove it, replace it, and close the access area. Undoubtedly, the placement of components in readily accessible locations would eliminate a large part of the time expended in removal and replacement. The feasibility of combining various microtechniques and devices in the development of weapon system subsystems has been recognized. It is imperative that these design advantages be measured against the requirement for better packaging and placement of components within the weapon system to insure maintainability and the most effective utilization of the maintenance manager's resources. If the functions of system performance and accuracy can be coupled with the factors of reliability and maintainability in the design and development of airborne navigation systems, we can look forward to vastly improved overall weapon system capabilities.

WHEN one considers that 85 percent of the scientists who have ever lived are still living today, the advanced state of our scientific and technological progress is not so astounding. Commercial electronic products and their reliability attest to the industrial capability to provide the home with a host of labor-saving and entertaining devices. That capability also holds the potential to provide the combat crew a highly reliable airborne navigation system with the maximum of easily maintainable features. The state of the art, from a technological viewpoint, is capable of providing performance and accuracy with pinpoint precision without the surrender of reliability and maintainability as prime features.

It appears that design and development techniques are aligned to the parameters of accuracy required by the user and that the challenge to industry is unmistakably clear. The requirement for highly accurate, reliable, and maintainable airborne navigation systems in the tactical weapon system of the present and the future is clearly defined. This fact could not have been more emphatically underscored than it has been by the dilemma in Southeast Asia. If one may be permitted a pun, "X marks the spot," and the tactical weapon systems of the present and the future require an airborne navigation system to reach that spot on an accurate and reliable basis.

Hq Tactical Air Command



We cannot meet the challenge facing our free society unless we can achieve and maintain a high level of morale and drive throughout the society.

JOHN GARDNER, *Excellence.*

THE MOTIVATION OF EXCELLENCE

DR. DAVID C. KORTEN

RISING manpower costs and strength reductions create the need for a new dedication to excellence among Air Force personnel. Such dedication is seldom achieved in any organization, and when it is, it generally reflects careful attention to the design of the organizational experience so that it will encourage and support high standards of personal performance. Managers of the Air Force personnel system have traditionally treated motivation as primarily a problem of career

motivation or service retention. As important as career retention may be, if the individuals retained are not also motivated to accomplish the Air Force mission, they are of little value to the Air Force. Indeed, the Air Force personnel system should be designed to produce not only acceptable performance but excellence in performance as well.[1]

The Motivation of Excellence and the Air Force Personnel System

John Gardner has identified a number of the preconditions to the motivation of excellence in organizations and societies which are useful in reviewing and evaluating some of the characteristics of the Air Force personnel system.[2] Gardner observes that there is a continual conflict between those norms of equalitarianism which ignore differential quality in performance and those norms of competitive performance which underlie a concept of excellence. Norms of equalitarianism are essential to maintaining a democracy, to preserving individual rights and values, and to avoiding the malicious destructiveness that can result from ruthless internal competition in an organization. On the other hand, norms of competitive performance are fundamental to the encouragement of individual excellence and the continued vitality of the organization or the society. Gardner maintains that this conflict is healthy so long as an appropriate balance is maintained.

While it may at first appear that the clear hierarchical structure of a military organization such as the Air Force represents a complete antithesis to overemphasis on equality, this is not necessarily the case. As Gardner observes,

> . . . a firmly observed hierarchy plus equalitarian relations for those at any given level of the hierarchy combine to limit effective performance. This is the kind of organization in which seniority weighs heavily in promotion, and the chief way to win points is to grow old.[3]

Equality refers here to equal treatment at any given level of the hierarchy for high and low performers, for the able and less able. The military command structure with entrance only from the bottom—a rigid rank structure and an orderly, nearly uniform progression through the ranks (especially at earlier career levels)—fits closely with Gardner's model of equalitarianism. To what extent is this equalitarianism offset in the Air Force by an organizational capability to recognize excellence? Some individuals feel that the stress on equality in present policies is excessive and has led to the exclusion of incentives for excellence. Dr. Jack W. Carlson made the following observations on current military personnel policies in a symposium sponsored by the Personnel Research Laboratory:

> . . . increased pay is not usually [he noted the specific exceptions] given for higher levels of skill, higher levels of education, superior performance or relative scarcity of each occupation. Almost without exception, DOD has requested higher across-the-board compensation increases instead of differential pay so as to recognize more fully higher skill and educational levels. . . . Promotion policies are successfully used in the private sector to retain and motivate skilled personnel. In contrast, in the Military Services and to some extent in the Civil Service, promotions are seldom given for above-average performance and for purposes of retention. Promotions are primarily based on waiting for the requisite age and then being promoted along with poorer performers.[4]

Similarly, a recently completed Air Force study noted:

> Under the present system almost all officers are promoted to the grade of captain and proceed to acquire approximately 10 years of commissioned service before they face any real promotion competition.[5]

Even then, the law allows for 90 percent of eligibles to be promoted to the grade of major.[6]

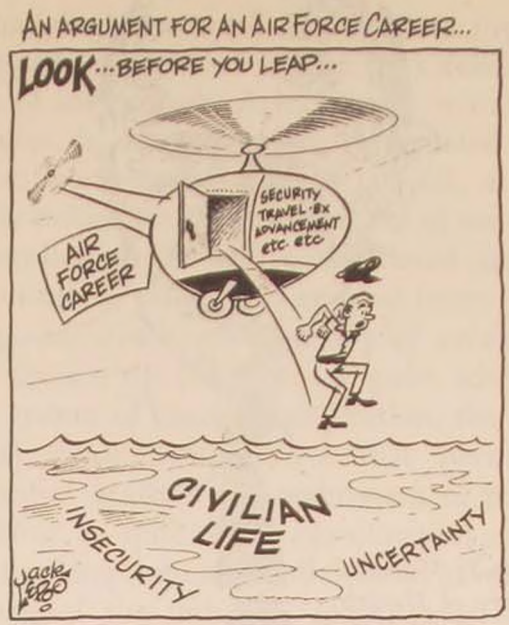
These characteristics of the present system are well known to Air Force junior officers. For example, a study of officer motivation found that the young Air Force officer does not associate either advancement in rank or increases in salary with successful accomplishment of his job.[7] This study concluded that

> In the Air Force it [advancement] appears to have little potency [as a motivator] basically because at the lower ranks advancement is determined primarily by time in service and not how well an individual performs his job . . . If the Air Force is to reap the motivational benefits of this factor, it must permit the individual to perceive the relationship between advancement and his achievements and recognize advancement as a sign of growth on his job and within the organization.[8]

Antony Jay has pointed out that such a situation is weighted not only against stimulating outstanding performance but also against attracting and holding top-quality talent:

> . . . if the corporation is only offering a secure future disguised as an exciting challenge, it is in danger of being overweighted with recruits whose primary concern is the pension plan, and then Gresham's law will start to operate. The bad drives out the good in management as well as in currency; if a man looks around him and sees people whom he recognizes as less able than himself all doing more or less the same work for more or less the same salary, he will start to think he is in the wrong place. As soon as he sees one or two of them promoted above him, he will know it.
>
> . . . promotions are the one visible, unmistakable sign of the corporation's standard of values, an irrevocable declaration of the qualities it prizes in its staff, a simultaneous warning and example to everyone who knows the nature of the job and the qualities of its new incumbent.[9]

The Air Force has acknowledged difficulties

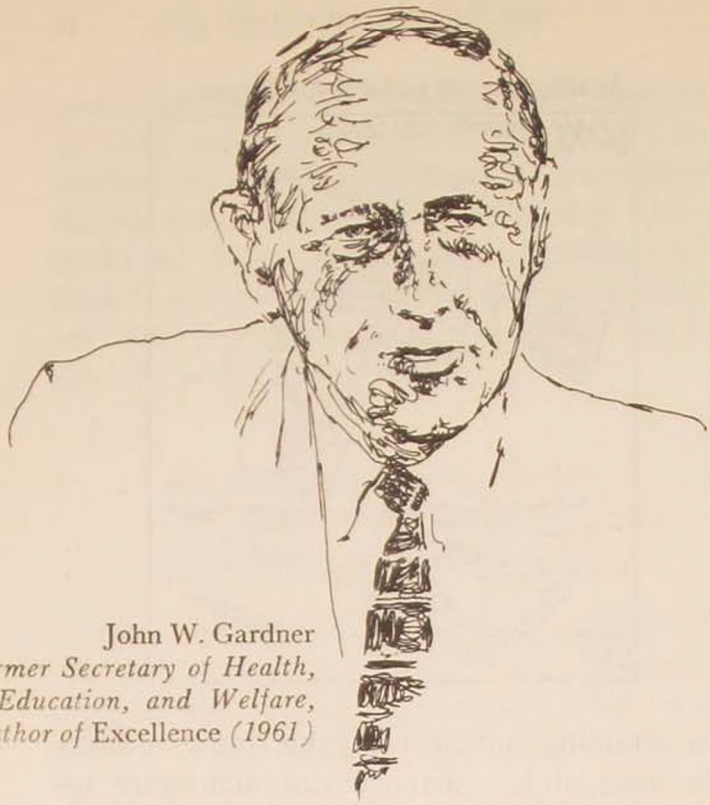


in retaining sufficient capable junior officers to meet middle management manpower requirements in the technical and support areas.[10] These difficulties are likely to increase as industry increasingly looks to young military officers as an attractive source for meeting its own critical middle management needs.[11]

Very few objective indices of personnel quality are available of sufficient validity to compare accurately the capability of those officers who voluntarily leave the service with that of those who are retained. However, a recent analysis indicates that the more education an officer has, the more likely he is to leave when free of his service obligation.[12] Though not conclusive, such findings suggest that retention is inversely related to the individual's prospects in the civilian job market.

Some Air Force re-enlistment campaigns seem specifically aimed at those who have the greatest doubts about their ability to compete in the civilian job market, as illustrated by a cartoon from the Andrews AFB (Maryland) newspaper, *Gateway*, of 24 January 1969.

This is a matter of sufficient importance to merit further study. Additional factors undoubtedly are involved in retention, and advancement does become competitive at the higher ranks. Nevertheless, the greatest num-



John W. Gardner
former Secretary of Health, Education, and Welfare, author of Excellence *(1961)*

ber of voluntary terminations from military service occur at the lower ranks, well before the system begins to provide any tangible recognition of merit.

The conflict between equality and excellence is reflected in the Air Force not only in matters of pay and promotion but also in the area of job assignment. Official policy seems to recognize and then ignore the conflict by simply issuing mutually exclusive and contradictory instructions. The Air Force manual on career motivation gives Air Force commanders the following directives.[13] With regard to seniority (equality) it states:

> Give seniority paramount consideration in assignments. Deviate only when the most unusual circumstances arise and when there is indisputable justification.

It then makes the following statements about recognition of ability (excellence), which appear to directly contradict the policy on seniority:

> Keep the troops informed as to Air Force objectives and their opportunity for a career that recognizes talent, dedication, and loyalty.
>
> Use to the maximum the energy, eagerness, and aggressiveness of junior officers whose education and motivation exemplify the apex of the Air Force Career Motivation objective.
>
> Know your men (officers, non-commissioned officers, and airmen), thereby insuring that each has a full-time job commensurate with his capabilities.

In the event of mutually exclusive instructions like these, the safest course of action is to make readily defensible decisions on the basis of the most clearly measurable and easily justifiable criteria, which, of course, would be seniority rather than ability. Such contradictory policy directives are likely to lead to frustration and cynicism in both supervisor and subordinate.

The Dynamics of Excellence and the Air Force System

Encouraging excellence in the large organization is not an easy matter. There are strong forces present in every organization which result from normal human reactions and cause a drift toward excessive regard for equality, to the detriment of excellence. The majority of the members of the typical organization tend to resist recognition of excellence because of the personal need to protect one's sense of self-worth. A system which promotes on merit implies that those not promoted are lacking in merit or worth. Promotion strictly on merit in a society which views performance as the rightful determinant of status places a special burden on those not promoted.

> . . . if a society sorts people out efficiently and fairly according to their gifts, the loser knows that the true reason for his lowly status is that he is not capable of better. That is a bitter pill for any man.[14]

By contrast, promotion based on seniority creates no particular pressure for possibly painful self-examination by those not promoted.

Three qualities are especially important for a system which seeks to encourage excellence. To the extent possible, it must:

—*Avoid confusing achievement with human worth.* Achievement should result from excellence, but "human dignity and worth should be assessed only in terms of those qualities of mind and spirit that are within the reach of every human being." [15] Thus, the system must avoid labels which seem to identify some members as first-class citizens and others as second-class.

—*Recognize the diversity of excellence.* One man may be an excellent mechanic, another an excellent writer, an excellent pilot, an excellent researcher, or an excellent manager. Each must be able to achieve the recognition appropriate to his own particular excellence.[16]

—*Provide multiple chances.* The man who fails to meet one test or evaluation should not feel that all future opportunity is cut off for his further advancement. This does not mean he should be promoted along with the successful but that as many opportunities as possible should be available to him to prove himself in the future and thus overcome the consequences of his previous failure. This helps avoid excessive despair and resentment as a result of a single failure.[17]

Trade-offs are nearly always involved in the application of a given set of standards. In the military, the operational requirements of combat must often take precedence over the requirements for promoting excellence. On the other hand, it is possible that an undesirable imbalance may develop if the trade-off considerations are not given continual explicit consideration. It is also important to distinguish clearly between what exists because of an operational requirement and what exists either merely from a failure to question tradition or from a failure of the management system.

How the Air Force measures up against the three qualities *may* be reflected in the following observations.

The Air Force and human worth. It has long been assumed that maintaining the military command authority and structure requires emphasizing a natural and almost mystical superiority of those of higher rank relative to those of lower rank. Achievement within this structure is often specifically equated with human worth and clearly so labeled, as most readily evident in the prerogatives of rank and the explicit social and promotional barriers separating the officer and enlisted forces.

The Air Force and diversity of excellence. Even though the Air Force is quite advanced in its system of career classification, the operational requirements of combat necessitate substantial flexibility in assignment of personnel. Thus, in spite of the classification system, there has long been an implicit ideal in military thinking of the universal officer who stands ready to step in and fill any leadership requirement that may arise consistent with the prerogatives of his rank. This idea has been referred to as the "fungibility" concept. This concept is clearly at odds with the need to recognize the diversity of excellence. The fungibility concept is reflected specifically in the fact that the officer effectiveness report (OER) and airman performance report (APR) systems of evaluating performance make no allowance for the diversity of excellence. There is no practical way to indicate that a man was misassigned outside the area of his competence without prejudice to his career. Likewise, the up-or-out promotion policy ignores the possibility that a man may have the ability to perform with excellence in a lower-grade job even though he may not have the ability for a higher-grade job. Consistent with the Peter Principle, he is inevitably promoted to his highest level of incompetence.[18]

The Air Force and multiple chances. There is a widely held belief among officers that a single below-average OER will seriously limit all future chances for promotion, regardless of future performance and ratings. This places unfortunate pressures on both the rater and the ratee and contributes to excessive inflation of ratings.[19] The highly skewed distribution of ratings toward the high end of the scale means

that, while it is very difficult for an individual to raise his rating above the norm, it is quite easy for him to lower it. Risk-taking and innovative behavior thus become actively discouraged by the reward system. The failure of the system to provide for multiple chances is in a major way responsible for this situation. The only way to give a man a second chance under the present system is to give him a high rating. This in itself contributes to the over-inflation of ratings and makes it difficult to identify and give recognition to those individuals whose performance is truly excellent.

The Requirement

Clearly, designing an organizational system which will motivate excellence is no small task. It requires a broad review of many complex and interrelated elements of the overall organization. Any effort to reduce the implication that those of higher rank are inherently of superior worth would require a long process of re-education and a review of military courtesies, social prerogatives, and the barriers between officer and enlisted ranks. Reduced reliance on the seniority system might require provisions for lateral entry and development of a means to recognize and reward excellence in performance at the lower ranks.

Even in dealing with less fundamental and far-reaching elements of the system, there are many complex issues and relationships involved. If one manager gives a realistic OER appraisal, he merely unfairly penalizes his subordinates without really contributing to the system's capacity to recognize excellence. Those who are responsible for designing and managing the OER cannot exercise control over the forces created by promotion criteria or the up-or-out policy. Changing the up-or-out policy requires rethinking of career progression patterns and development of alternative mechanisms for separating those personnel who are not likely to contribute to the Air Force mission in any capacity.

Effective correction of weaknesses in a motivational system requires joint coordinated action cutting across numerous functional lines of authority. Initiating and coordinating mechanisms that are presently nonexistent would be required.

No one is likely to deny the need for commitment to excellence in individual and organizational performance. The implications of such commitment, however, require difficult self-examination and may have far-reaching implications for the way an organization such as the Air Force is managed.

Harvard Graduate School of Business Administration

Notes

1. For a previous article dealing with some broader problems of organizational design as they relate to the Air Force, see David C. Korten, "New Directions for Air Force Leadership: Design for Organizational Renewal," *Air University Review*, XXI, 6 (November-December 1970), 59–68.
2. John W. Gardner, *Excellence: Can We Be Equal and Excellent Too?* (New York: Harper & Row, 1961).
3. *Ibid.*, pp. 26–27.
4. Jack W. Carlson, "Improving Efficiency in the Use of Manpower Resources," in Angelo L. Fortuna, ed., *Personnel Research and Systems Advancement*, Proceedings of the Twenty-fifth Anniversary Symposium of the Personnel Research Laboratory, USAF (Lackland Air Force Base, Texas, December 1967), pp. 151–62.
5. AFPDPO, "Special Study Group on Characteristics of the Officer Force," DCS/Personnel, Hq USAF, 20 February 1969, p. 21. Hereafter referred to as AFPDPO.
6. *Ibid.*
7. Directorate of Studies and Analysis, "Officer Motivation Study New View," DCS/P&O, Hq USAF, November 1966, pp. 47–48, 54.
8. *Ibid.*, p. 148.
9. Antony Jay, *Management and Machiavelli: An Inquiry into the Politics of Corporate Life* (New York: Holt, Rinehart and Winston, 1967), p. 178.
10. AFPDPO, pp. 22–23.
11. New firms such as Lendman Associates of Norfolk, Virginia, and Gilbert Lane Personnel Agency of New York, which specialize in recruiting junior military officers completing their initial tour of duty for management positions in industry, are going to make attractive civilian opportunities increasingly visible to capable junior officer personnel.
12. Lt. R. P. Cook, "Officer Characteristics Study," AFPDPLA, Hq USAF, 24 April 1969.
13. AFM 36–16, *USAF Career Motivation Program for Officers and Airmen, Motivational Concepts and Directive*, 4 December 1968, Vol. 1, pp. A4-1–A4-3.
14. Gardner, p. 71.
15. *Ibid.*, p. 81.
16. *Ibid.*, pp. 127 ff.
17. *Ibid.*, p. 116.
18. Laurence J. Peter and Raymond Hull, *The Peter Principle: Why Things Always Go Wrong* (New York: William Morrow, 1969).
19. Numerous weaknesses of the OER system have been pointed out by Major Albert H. Thelander in "The Air Force Should Replace the OER," *Air University Review*, XX, 2 (January–February 1969), 115–119. The degree of skewness in OER means is reflected in the fact that, though weighted OER means are calculated on a 9.0 scale, only 11.6 percent of the officers in the 3 to 5 years' service group have an average below 7.0, with the result that any rating below 7.0 is considered to reflect marginal performance. See AFPDPO, p. 16 and Attachment 5.

Air Force Review

WILLIAM TELL 1970

Lieutenant Colonel Joseph L. Phinney

ACCORDING to legend, a medieval Austrian governor of Switzerland became enraged when a Swiss citizen refused to comply with his order to perform a trivial act of obeisance. Knowing of the subject's prowess as a bowman, the governor offered him the alternative of complying with the order or shooting an apple off his son's head. The archer chose to shoot the apple, and succeeded. Through the years the name of William Tell has become synonymous with skilled marksmanship in defense of freedom. Thus today's air defense units can be considered contemporary extensions of the William Tell tradition.

In the accomplishment of their mission and responsibilities, air defense units must exemplify the dedication, accuracy, and confidence that the legendary William Tell displayed in earlier times. Weapon systems and personnel must be honed to perform at the peak of efficiency during periods of stress. The best measure of this capability is a competitive environment. To these ends, the Fighter Interceptor Weapons Meet was resumed at Tyndall AFB, Florida, in October 1970 after an interruption of five years.

William Tell Fighter Interceptor Weapons Meets began in the early fifties and were conducted on a biannual basis through 1965. The competitions were suspended after the 1965 meet because of the increasing requirements of the Vietnam conflict. In November 1968, however, Aerospace Defense Command (ADC) staffers began preliminary planning for a worldwide interceptor weapons meet to be conducted in October 1971. The event was to involve air defense forces from USAFE and PACAF as well as those of the North American continent. But operational and financial considerations caused this plan for a worldwide meet to be abandoned in late 1969 in favor of a low-cost, in-house

competition for representatives of ADC, Air National Guard, and Canadian Armed Forces in 1970.

Three categories of interceptors competed in William Tell '70. F-101, F-102, and F-106. Four awards were presented in each category: one to the best aircrew/maintenance team, another to the best weapons controller team, a third to the best weapons load team, and the fourth to the team amassing the highest point total in each category. No overall winner was selected from the nine participating teams.

The Canadian Armed Forces were invited to participate and were represented by the 409th All Weather Fighter Squadron, which had prevailed over two other Canadian F-101 units in competition in May 1970. Final selection of U.S. Air National Guard participants was made by the National Guard Bureau. Selections were based on unit performance over the preceding 18-month period. An evaluation team from Hq ADC selected competitors from among units nominated by ADC's six air divisions.

Each team was made up of four aircrews, two weapons control teams, the maintenance support element, and members of the weapons loading team. No substitutions were allowed except in the aircrews, where one spare crew was authorized. Each team had to declare its four participating aircraft the evening before the flying competition began. No spare aircraft were authorized. The maintenance support element played a major role in determining the degree of success of each team.

Events for William Tell '70 began with the arrival of aircraft and crews on Thursday, 22 October. The next day crews were briefed on the competition rules and local procedures, and members of weapons load teams were given written examinations. Shakedown flights were conducted over the weekend. Final briefings on the rules were conducted under the supervision of the Chief Judge, Major General Donavon F. Smith, Director of Operational Requirements and Development Plans, DCS/R&D, Hq USAF.

Formal competition began on the morning of 26 October. Each team was scheduled for three live-firing missions conducted during daylight hours and one electronic countermeasures (ECM) dry-firing mission conducted at night. All four team aircraft were charged with a firing attempt on each mission. Points were awarded for making assigned takeoff and recovery times and for the use of proper intercept control procedures. Live-firing point scores were awarded, based on the type of armament used and the linear miss distance in feet from the aim point on the target. The ECM mission scores were determined from signal inputs recorded on weapon system evaluators, which were loaded on the aircraft in place of live armament. In addition to the firing missions, each team participated in a weapons loading competition. Load teams were evaluated on the proper use of equipment and procedures and on the time required to complete the load. Strict adherence to safety criteria was essential to achieving a good score in the weapons loading competition. The final sorties of the meet were flown on the morning of Saturday, 31 October.

Targets for the William Tell live-firing missions were the BQM-33A drone and the TDU-25B towed target. The former, a subsonic, jet-propelled drone, is remote-controlled from the ground and can carry either the MATTS or BIDOPS scoring system. The TDU-25B, towed on a 26,000-foot cable by an F-101 "tractor" aircraft, burns butane to generate a constant heat source. It uses the BIDOPS scoring system and is designed as a target for infrared "heat seeking" missiles.

The MATTS scoring system, which scored all ATR-2A rocket shots during the competition, uses transmitting devices in the target, in the interceptor aircraft, and in the rocket itself. A ground receiver/computer system receives and processes inputs from the airborne transmitters and depicts the rocket impact point in relation to the aim point in X, Y, and Z coordinates. The BIDOPS system, which scored all shots of the AIM-family missiles, incorporates a recording system in the target that senses linear missile miss distance and transmits this information to a ground receiver station.

Competition was keen in all categories, and winners were not determined until the last mission had been flown. The F-101 overall category winner was the Air National Guard 119th Fighter Group from Fargo, North Dakota. The 119th also captured the aircrew/mainte-

nance team trophy. The weapons loading competition was won by the Canadian 409th AW (F) Squadron from Comox, British Colombia, while the controllers of ADC's 60th Fighter Interceptor Squadron from Otis AFB, Massachusetts, prevailed over the other F-101 weapons directors. Guardsmen of the 148th Fighter Group, Duluth, Minnesota, swept the F-102 category, winning all except the weapons loading event, which went to the 124th Fighter Group from Boise, Idaho. In the F-106 category, the 71st Fighter Interceptor Squadron from Malmstrom AFB, Montana, was the overall winner; it also captured the aircrew/maintenance team award. The 84th Fighter Interceptor Squadron from Hamilton AFB, California, was victorious in the weapons control and weapons loading competitions.

William Tell '70 provided a means of evaluating the performance of aircrews, aircraft, and weapons in a competitive rather than a test environment. Results of five years of rigidly controlled test firings could be compared with the results achieved during a competition in which firing parameters were not absolutely dictated. William Tell '70 firing results were carefully analyzed and added to the existing ADC data bank. To enhance this effort, data collection was given much greater emphasis during the 1970 meet as compared to previous meets.

William Tell '70 differed from previous interceptor weapons meets in other respects, also. The prevailing theme of the competition was austerity. All efforts were directed at conducting the meet within the budget, approximately one-tenth of the 1965 William Tell budget, and these efforts were successful, no additional funds being authorized. The costs of the meet were defrayed by using funds that had been allocated to Headquarters Aerospace Defense Command, the Air Defense Weapons Center, and the participating units. At the conclusion of the meet, General John D. Ryan, Chief of Staff, USAF, sent a message to Lieutenant General Thomas K. McGehee, Commander, Aerospace Defense Command, which read in part:

> As the ramp at Tyndall is emptying and interceptor units are returning home, I want to congratulate you and members of your command for having conducted a highly successful "William Tell" Weapons Meet. This meet is particularly pleasing in that you have accomplished all of the objectives at less than one-tenth of the cost for prior competitions. Congratulations again for a spectacular accident/incident free Weapons Meet.

Nine teams competed in William Tell '70, compared to 16 in 1965. The schedule of competitive events was given careful consideration, taking into account such contingencies as weather delays and scoring system failures. The result was a compressed schedule that provided for completion of the meet, with ample provision for makeup missions, in one week.

Another objective of William Tell '70 was to evaluate the capabilities of current air defense weapon systems. The second-generation interceptors performed much as expected. The results were highly satisfactory, considering the aircraft, armament, and targets used. There is still, of course, room for improvement. One can only speculate what would have happened to the scores if more realistic targets, such as supersonic drones or more maneuverable targets, had been used. William Tell '70 further substantiated the requirement for more sophistication and greater reliability in air defense weapon systems.

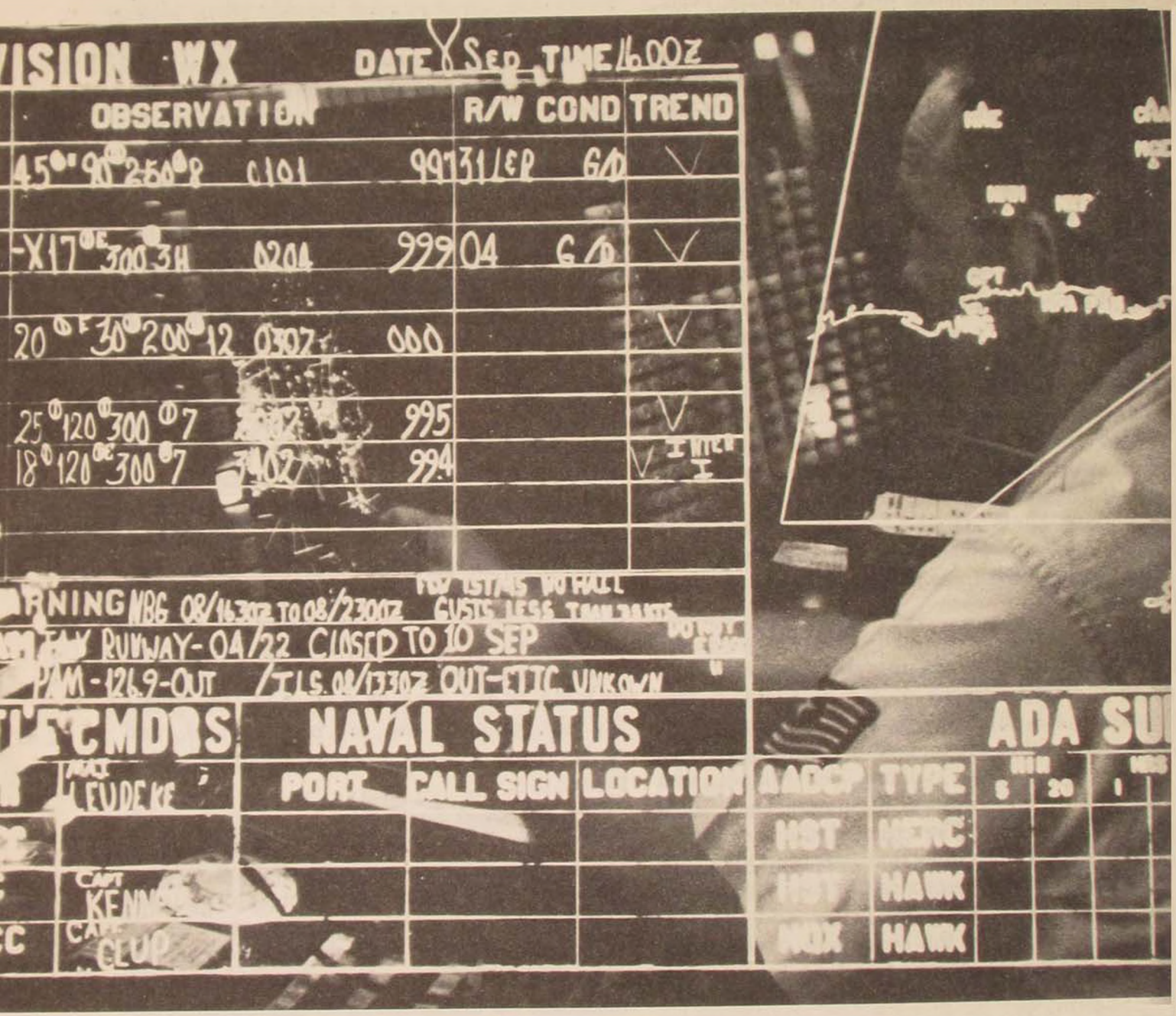
The air defense interceptors currently in use have been around for a long time. The F-106, our most modern and effective vehicle, first appeared on the design board in 1949 and has been in active service since 1959. The F-106 is an excellent aircraft which does a fine job in terms of the state of the art for the 1960s. But the state of the art has changed, and systems modifications have not adequately kept pace.

To combat technological advances in existence, a new interceptor is needed, a high-speed, long-range aircraft capable of standoff engagement of hostile targets; an interceptor capable of detecting and tracking a target at ranges in excess of 100 miles and then launching and controlling armament in a successful attack regardless of target speed, altitude, maneuverability, or countermeasures. When this goal is realized, air defense forces will have far greater potential, and effective mission performance will be better assured.

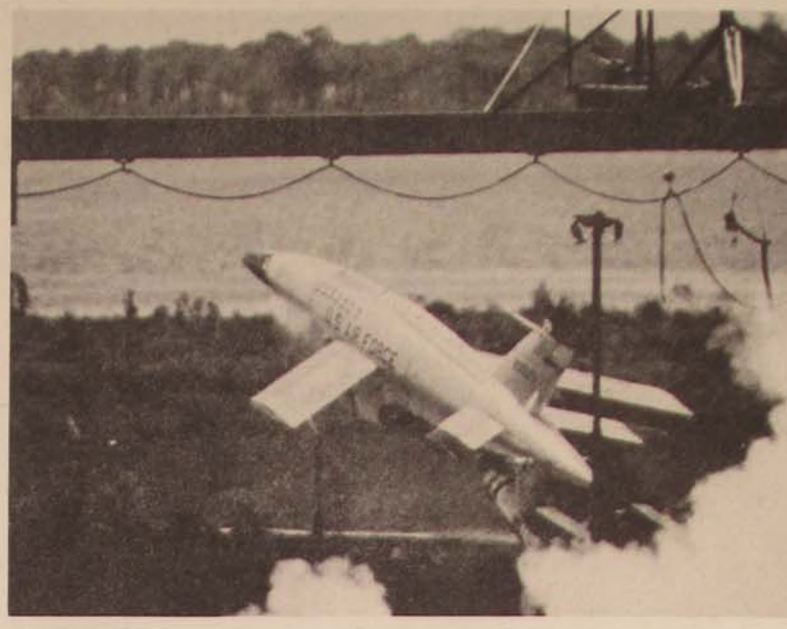
In conclusion, it might be appropriate to

mention the words of General McGehee, spoken during the awards presentation on 31 October 1970: "There are no losers in William Tell, only winners." William Tell '70 was concluded successfully and without accident or incident, a tribute to the skill and professionalism of each individual who was involved.

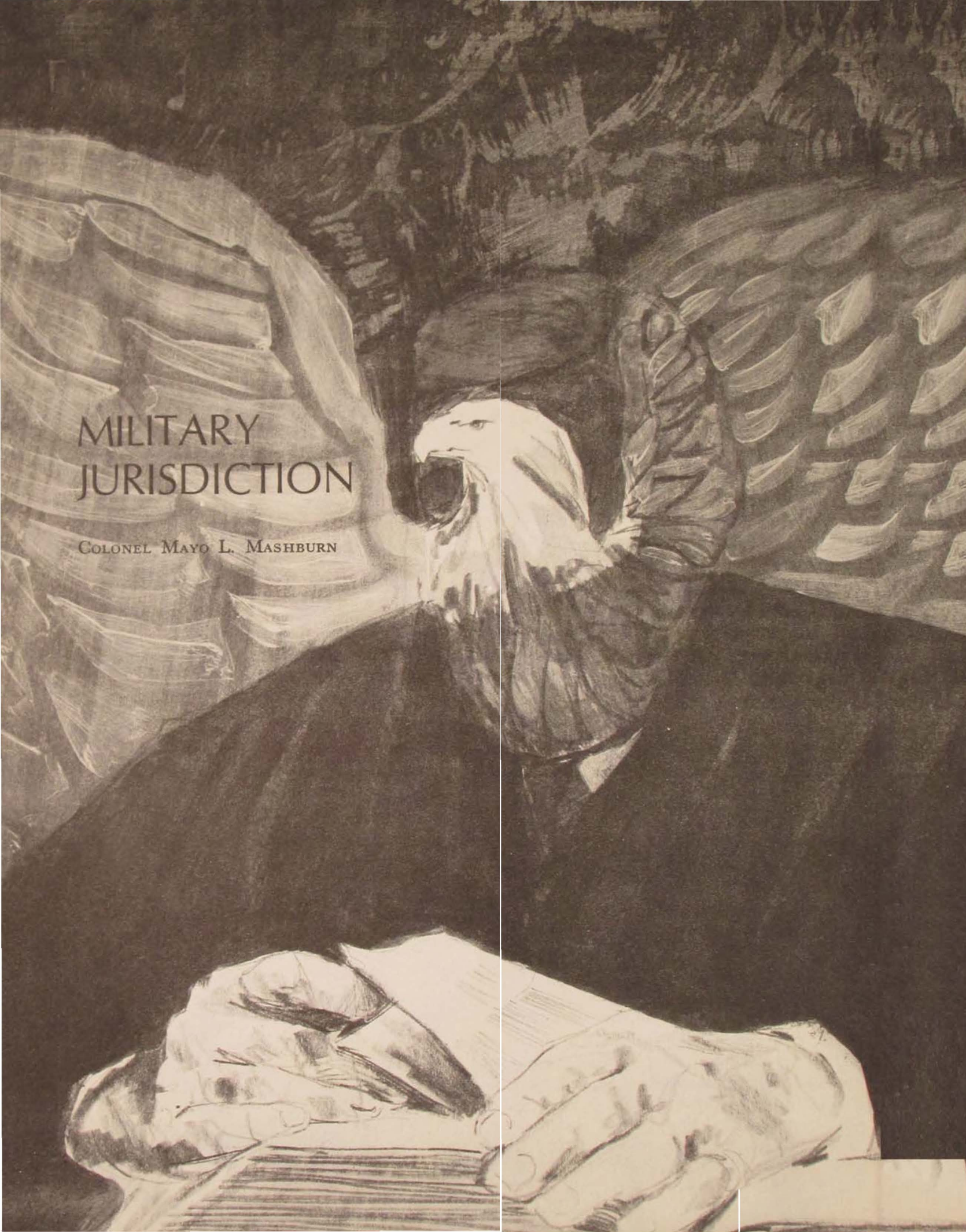
Hq United States Air Force



During William Tell '70, a weapons control technician (seen through a division status display) queries his Back-Up Interceptor Control (BUIC) system computer for target information. BUIC was used to supplement the Semi-Automatic Ground Environment (SAGE) system for the October weapons meet conducted by the USAF Aerospace Defense Command at Tyndall AFB, Florida.



An ADC crew installs a Falcon missile on an F-106 Delta Dart interceptor. . . . A Firebee drone, boosted by rocket until its jet engine takes over, flies more than an hour above 50,000 feet at 600 mph, allowing many firing passes. . . . An ADC supersonic F-101 Voodoo fires an air-to-air rocket. . . . F-106s fly simulated combat missions over the Tyndall firing range, hundreds of square miles of the Gulf.



MILITARY JURISDICTION

COLONEL MAYO L. MASHBURN

ON THE NIGHT of 20 July 1956, James F. O'Callahan, a sergeant in the United States Army stationed at Fort Shafter, Territory of Hawaii, entered a civilian hotel in Honolulu, broke into a room occupied by a fourteen-year-old girl, and assaulted and attempted to rape her. Following the girl's resistance and screams, he fled and was shortly apprehended by a hotel security officer. He was first turned over to the civilian police and then, when it was determined that he was a member of the armed forces, to the military authorities.

Sergeant O'Callahan was subsequently tried by an Army general court-martial for the offenses of attempted rape, housebreaking, and assault with intent to commit rape, in violation of Articles 80, 130, and 134 of the Uniform Code of Military Justice. He was convicted on all charges and sentenced to a dishonorable discharge, forfeiture of all pay and allowances, and confinement at hard labor for ten years. Following review and approval of his case by military review authorities,[1] O'Callahan was transferred to the United States penitentiary at Lewisburg, Pennsylvania, to serve his sentence.

In 1960 O'Callahan was paroled. While on parole he was convicted of rape in Massachusetts and sentenced to prison in that state.[2] In 1966 he was released from the Massachusetts State Prison and, as a result of this conviction, was returned to the federal penitentiary as a parole violator to serve out the original sentence imposed by the Army court-martial.

Following recommitment to the federal penitentiary, O'Callahan filed a petition for writ of habeas corpus in the United States District Court for the Middle District of Pennsylvania, alleging, *inter alia*, the Army court-martial did not have jurisdiction to try him for his civilian-type offenses committed off post and while in an off-duty status.[3] Instead, it was contended that he should have been tried in the territorial courts of Hawaii, where he would have been afforded the rights of indictment by grand jury and trial by jury as guaranteed by Article III, Section 2, and the Fifth and Sixth Amendments of the United States Constitution. The District Court denied relief, and, on appeal, the United States Court of Appeals for the Third Circuit affirmed.[4] The United States Supreme Court subsequently granted certiorari on the question of whether a court-martial had jurisdiction to try a member of the armed forces for a civilian-type criminal offense cognizable in the civilian courts and committed off post while in an off-duty status.[5]

In deciding that the court-martial was without jurisdiction to try O'Callahan for his offenses, the Supreme Court observed that Congress's power to "make rules for the Government and Regulation of the land and naval forces"[6] and the Fifth Amendment exception from the requirement of indictment and jury trial of "cases arising in the land and naval forces" must be considered in historical context with Article III, Section 2, and the Sixth Amendment of the Constitution, which provide for indictment by grand jury and trial by jury.[7] Through a process of historical review, the Supreme Court concluded that it was never intended that military personnel would be deprived of the constitutional right to indictment and jury trial except in those cases where one could say the crime was "service-connected." Stated another way, that portion of the Fifth Amendment which provides that indictment by grand jury and trial by jury are not applicable to "cases arising in the land and naval forces" was intended to apply only to crimes committed by military personnel that are service-connected. The court observed that if the restriction of "service-connection" were not imposed, the Fifth Amendment exception of "cases arising in the land and naval forces" could "be expanded to deprive every member of the armed services of the benefits of an indictment by a grand jury and a trial by a jury of his

peers." [8] If the crime was not service-connected, then the constitutional protection of indictment by grand jury and trial by jury must be met and, in order that this be done, the serviceman tried in the civil courts.

In reviewing the O'Callahan case and rendering its decision, the Supreme Court was obviously concerned with the constitutional justification for treating a person in the military differently from a civilian, when both have committed the same criminal act. Based upon its historical review, the court determined that the "military status" of the offender is not alone sufficient to justify a different form of prosecution from that of the civilian for the same misconduct. If no reasonable difference appears between the civilian and the military person in the commission of the same wrongful act, the court concluded that the two cannot be prosecuted differently. On the other hand, if the offense committed by the serviceman is service-connected, then he can be tried by court-martial.

In concluding that the military could not exercise jurisdiction over a military offender unless his crime was service-connected, the court failed to define the term "service-connected." Instead, it simply observed that O'Callahan

> . . . was properly absent from his military base when he committed the crimes with which he is charged. There was no connection —not even the remotest one—between his military duties and the crimes in question. The crimes were not committed on a military post or enclave; nor was the person whom he attacked performing any duties relating to the military. Moreover, Hawaii, the situs of the crime, is not an armed camp under military control as are some of our far-flung outposts.
>
> Finally, we deal with peacetime offenses, not with authority stemming from the war power. Civil courts were open. The offenses were committed within our territorial limits, not in the occupied zone of a foreign country. The offenses did not involve any question of the flouting of military authority, the security of a military post, or the integrity of military property.[9]

By enumerating these various factors, the court implied that they would be significant in establishing the service-connection required for military jurisdiction. However, there was no indication as to whether any one or less than all of the enumerated factors, standing alone, would be significant.

Since this is all the guidance the Supreme Court set out in its O'Callahan decision, the United States Court of Military Appeals has been using these implied guidelines in deciding questions of military jurisdiction in the cases that have been tried and reviewed by that court. Since the O'Callahan decision in June 1969, the Court of Military Appeals has decided 49 cases concerning the question of whether the military courts had jurisdiction to try the offenses involved.

THE PURPOSE of this article is to examine the Court of Military Appeals' decisions with a view toward explaining how this court has interpreted and applied the O'Callahan decision. In this review I do not question the merits of the O'Callahan decision, nor do I attempt to furnish a comprehensive coverage of the innumerable problems, questions, and ramifications that have arisen and will continue to arise in the application of that decision to court-martial jurisdiction.

Generally, the cases thus far decided by the Court of Military Appeals can be broken down into these categories: foreign offenses; on-base offenses; military offenses committed on or off base; off-base offenses involving military victims; offenses involving reliance on the military status of the offender; petty offenses; and other off-base offenses.

foreign offenses

To date, a number of cases have been

decided by the Court of Military Appeals involving military trials held outside the United States, its territories and possessions, for offenses committed outside this area. These cases have involved such offenses as counterfeiting, use of marihuana, housebreaking, murder, assault with intent to murder, negligent homicide, and robbery.[10] In one case the offense was not listed.[11]

Without exception, the Court of Military Appeals has held that the constitutional limitation on court-martial jurisdiction laid down in the O'Callahan case is not applicable to military trials held outside the United States, its territories and possessions, for offenses committed by servicemen outside this area. In the leading case in this category the court observed that, except for service-connected offenses, the purpose of the O'Callahan decision was to provide servicemen the rights of indictment by grand jury and trial by jury and that, essential to this holding, was the fact that the offense must be triable in the state or federal courts.[12] Clearly, a serviceman could not be tried in any state court for an offense not committed within the state's boundaries.

By the same token, the vast majority of offenses committed by servicemen in foreign countries in violation of the Uniform Code of Military Justice are now triable in the federal courts, for they are not, at the same time, violations of the federal penal statutes. Thus, the serviceman would have to be tried by the military or a foreign court, neither of which would afford him the constitutional benefits of indictment by grand jury and trial by jury.

Since the Court of Military Appeals has quite clearly held that the O'Callahan decision is not applicable to offenses committed by servicemen in foreign countries, the question of whether an offense committed in a foreign country by a serviceman is service-connected need not be considered.

In this area of jurisdiction, the Court of Military Appeals is clearly on solid ground for the simple reason that in most cases there are no means available to provide offenders the benefits of indictment by grand jury and trial by jury. Additionally, in most instances, the alternative to military trial would be trial in the courts of the country in which the offense was committed. If the Supreme Court were presented this alternative, surely it would hold that trial before an American court-martial in which the fundamentals of due process are observed would be preferable to leaving American servicemen to the widely varying standards of justice in foreign courts throughout the world.

on-base offenses

Without exception, the Court of Military Appeals has upheld court-martial jurisdiction in all cases involving offenses committed on a military reservation within the territorial limits of the United States. These cases have included bad-check offenses, robbery, murder, larceny, sodomy, carnal knowledge of a female under the age of sixteen, and wrongful appropriation of a motor vehicle.[13]

In these cases the appeals court has referenced the O'Callahan decision, wherein it was noted that O'Callahan's offenses had not been committed on a military post, and has stated that the Supreme Court thereby implied that had the offenses been committed on post the military would have had jurisdiction. The Court of Military Appeals has adopted this line of reasoning and has held that the military has jurisdiction to try servicemen for offenses committed on base without regard to the nature of the offense or the status of the victim. In a murder case committed on base at a naval air station, the court went beyond this basic reasoning and stated:

> Since it is the military duty of a serviceman to obey the laws of the military community when he is physically located within the confines of that community, the "service connection" of the offense charged in this case is apparent.[14]

In another case the court added that ". . . the need to maintain 'the security of a military post' is sufficient to vest in the court-martial jurisdiction to try" the offense of carnal knowledge of a female under the age of sixteen.[15] In yet another case, involving sodomy, the court stated that with respect to on-base offenses "the military are charged with maintaining the security of that area," and "This factor is sufficient to vest in the court-martial jurisdiction . . ." to try the offense.[16]

In short, the Court of Military Appeals has held that any offense committed on base is service-connected, and thus, without exception, the military has jurisdiction. Admittedly, it is a position of immaculate precision that makes for a simple, uniform, and easy-to-apply rule. However, the logic of such an all-encompassing rule is not unassailable.

In the O'Callahan case, the Supreme Court did in fact observe that O'Callahan's offenses were not committed on a "military post or enclave." However, this was only one of numerous factors that were noted as being absent in that case. Had the court intended that any one of these factors, standing alone, would be absolutely controlling, it could easily have said so. Moreover, the purpose of the O'Callahan decision was to preserve for the serviceman, insofar as possible, the constitutional rights of indictment by grand jury and trial by jury. This being the case, one might ask whether there is really a materially significant difference between a serviceman's murdering his wife in a parking lot on base and a parking lot off base? Or, is there a significant difference between an offense in an off-base apartment and in housing on base?

If the Supreme Court in the O'Callahan case was concerned, as indeed it must have been, with the constitutional justification for treating a serviceman differently from a civilian when both commit the same criminal act, it is questionable whether a carte blanche rule, calling for a different form of prosecution in any and all cases for the serviceman merely because he commits the particular offense on base, is justifiable.

In a case involving the military trial of an ex-serviceman for murder allegedly committed prior to his discharge, the Supreme Court, in setting aside his conviction, stated:

> There are dangers lurking in military trial which were sought to be avoided by the Bill of Rights and Article III of our Constitution. Free countries of the world have tried to *restrict military tribunals to the narrowest jurisdiction deemed absolutely essential to maintaining discipline among troops in active service. . . .*
>
> Determining the scope of the constitutional power of Congress to authorize trial by court-martial presents another instance calling for *limitation to the least possible power adequate to the end proposed.*[17] (Italics supplied.)

This very same language was again quoted by the Supreme Court in the O'Callahan decision.[18]

If the Supreme Court continues the philosophy of the "least possible power adequate to the end proposed," it is doubtful that it would uphold, across the board, the rule of the Court of Military Appeals in this area of jurisdiction. An indication that this undeviating rule may not be accepted is evidenced by the fact that the Supreme Court has now granted certiorari on the question of whether a court-martial had jurisdiction to try a serviceman for the offenses of rape and kidnaping committed on a military base.[19]

military offenses committed on or off base

This category involves military offenses such as absence without leave and escape from confinement.[20] The Court of Military Appeals has upheld jurisdiction by the simple observation that these types of offenses are obviously service-connected. While the court has not articulated its reasons for holding that these offenses are service-connected, it seems compellingly obvious that military jurisdiction is

legitimately exercised in these cases for the simple reason that they have no civilian counterpart, and the Congress and the military are, of necessity, authorized to proscribe and punish such offenses. Since these "military" offenses are unknown to the civilian sphere and could not therefore be tried in the civilian courts, a serviceman could never be entitled to indictment and jury trial. The obvious alternative to military trial would be no trial at all.

Included within this general category are offenses that could be tried in the state or federal courts. These involve the use of heroin and cocaine, the use or possession of marihuana, and the unlawful delivery of prohibited drugs to another serviceman.[21] In these cases the court has held that the use or possession, on or off base, of marihuana and narcotics has a special military significance since their use has "disastrous effects on the health, morale and fitness for duty of persons in the armed forces," and their wrongful possession on or off base is a "matter of immediate and direct concern to the military as an act intimately concerned with prejudice to good order and discipline or to the discredit of the armed forces." [22] The court held that the unlawful delivery of prohibited drugs to another serviceman is as service-connected as possession. It reasoned that the accused served as a conduit for unlawful possession by another serviceman and that his possession, in turn, has a deleterious effect on his health, morale, and fitness for duty which the military is authorized to protect.[23]

Unquestionably, the court is on solid ground in holding that the use of marihuana and narcotics on or off base is service-connected and that the military therefore has jurisdiction to try these types of offenses. Surely Congress, through its constitutional grant of power to govern and regulate the armed forces, can proscribe and punish any misconduct that would reasonably and directly affect the military man's ability to carry out his duties.

Even though the Court of Military Appeals has done so, the same argument should not be advanced with respect to the possession or delivery of marihuana and narcotics. Since possession is not tantamount to use, it seems farfetched to argue that "possession" or "delivery" alone has a deleterious effect on the health, morale, and fitness for duty of persons in the armed forces. Possession or delivery of these prohibited items does not have the same direct impact upon the military as does their use. Admittedly, the serviceman's possession or delivery to another is service-discrediting, but no more so than his breaking into a hotel room and attempting to rape a young girl.

At any rate, the Court of Military Appeals' position with respect to possession has not been accepted by one federal court, as evidenced by a recent decision of the United States District Court for the District of Rhode Island. In that case the District Court, in granting an injunction prohibiting military authorities from court-martialing a serviceman for possession of 42.5 ounces of marihuana, observed, without elaboration, that the off-base possession of marihuana was not a crime of special military significance so as to support military jurisdiction.[24]

Until these diametrically opposing views are resolved, the rule with respect to possession and delivery of marihuana and narcotics will remain doubtful. If it is ultimately determined that possession is not service-connected, the same rule would logically apply to delivery.

off-base offenses involving military victims

Numerous off-base crimes committed against service personnel have been decided by the Court of Military Appeals. These cases have involved the offenses of housebreaking and larceny or intent to commit larceny therefrom, auto theft, robbery, forgery, and various types of assault.[25] All these cases have involved two-to-one decisions upholding military jurisdiction.

In these cases the majority went back to the O'Callahan decision and noted that the Supreme Court had cited, with apparent approval, an excerpt from an 1880 treatise by Colonel Winthrop to the effect that certain crimes committed upon a military person (e.g., theft from or robbery of an officer, soldier, post trader, or camp follower; forgery of the name of an officer; and manslaughter, assault with intent to kill, mayhem, or battery, committed upon a military person) directly affect military relations and prejudice military discipline. The court concluded that such effect on military relations and discipline furnishes the required service-connection. On this reasoning, the court has upheld jurisdiction in all off-base cases involving military victims, even where the accused did not know his victim was military.[26] Moreover, the court has stated that any offense under the Uniform Code of Military Justice "perpetrated against the person or property of another serviceman, regardless of the circumstances, is cognizable by court-martial." [27]

The dissent in these cases has generally taken the position that since O'Callahan's military status, standing alone, was not sufficient to confer jurisdiction on the military courts, neither is the military status of the victim. In the crimes involving the property of military personnel, the dissent has contended that the military has no identifiable military interest in the off-base property of a serviceman sufficient to warrant jurisdiction, particularly in view of the court's previous holding that the military had no jurisdiction over an off-base carnal-knowledge offense committed against a serviceman's dependent.[28] In cases involving the person of the victim (robbery, assault, etc.), the dissent has contended that these types of offenses have no direct deleterious effect on military matters or discipline and that their effect, if any, is too remote to justify incursion of military jurisdiction into an area that is essentially a concern of the state.

In this area of military jurisdiction, I submit that the minority position is the better reasoned and more logical. In the first place, the majority's reliance on a footnote in the O'Callahan case, citing an excerpt from Winthrop's 1850 treatise (to the effect that thefts from and assaults on other soldiers are peculiarly military crimes), seems to be a pretty thin reed on which to lean in deciding court-martial jurisdiction. The Supreme Court's notice of this excerpt does not rise even to the level of being dictum, much less a specific holding. Moreover, for all that is known, Winthrop could have had in mind assaults committed against a serviceman on base or while in the performance of military duties and thefts committed in the military camps. In the second place, with respect to offenses against property, it is difficult to reconcile the court's position that sexual intercourse with another serviceman's child is not service-connected but that unlawfully entering his off-base dwelling or stealing his personal property off base is service-connected. As the court's rule now stands, a serviceman can be militarily prosecuted for offending against a fellow serviceman's off-base property but not against his minor dependents. Finally, if the purpose of the O'Callahan decision was to preserve, insofar as possible, the serviceman's right to indictment and jury trial and to restrict military jurisdiction to the narrowest possible point deemed absolutely essential to maintaining discipline, there does not appear to be any compelling justification for military jurisdiction over these types of offenses. To the contrary, it appears that this is yet another area in which the Court of Military Appeals has carved out a questionable case for the exercise of court-martial jurisdiction.

reliance on military status

Cases decided in this category have involved the off-base offenses of forgery, wrongful appropriation, and dishonorable failure to pay

debts. In one case the serviceman identified himself as such, was permitted to take a used car out for a trial run, and did not return it.[29] In another case the serviceman donned an officer's uniform, checked into a hotel, ran up a large bill, and was then unable to pay.[30] In one forgery case the victim stated he cashed a forged check only after the accused identified himself as being in the service.[31] In another, the forged checks negotiated to an airline bore indorsements with a military address.[32]

In the wrongful appropriation and forgery cases, the court, in two-to-one decisions, upheld jurisdiction on the grounds that the improper use of military status is likely to adversely affect the confidence of the public in the members of the armed forces and that such abuse or improper use must be punished lest innocent members suffer. This, the court contended, established the necessary service-connection required for the exercise of court-martial jurisdiction.

The dissent took the position that since status alone is insufficient to vest jurisdiction in a court-martial, reliance on that same status by the victims of these offenses is likewise insufficient to justify the incursion of military jurisdiction into areas that are primarily the concern of the state. In the case of dishonorable failure to pay, a unanimous court held that while status of the offender is not enough to confer jurisdiction, positive misuse of the status to secure privileges or recognition not ordinarily accorded others is enough to make the offense service-connected. The dissenting judge in the first-mentioned cases joined in this latter decision, presumably on the grounds that the offender's disguise as an officer was prejudicial to good order and discipline and that this factor furnished the required service-connection.

Basically, these cases stand for the proposition that where an accused's military standing or rank facilitates commission of the offense, the offense is then service-connected. This position is admirable and indeed an appealing one, particularly to the military community, which would be the first to take offense at a fellow serviceman's "use" of his military status. However, with O'Callahan as the guideline, the position may be more emotional than legal.

In the O'Callahan case, the thrust of the court's decision seemed to be that there must be some connection between an offender's military duties and the crimes in question or the offenses must involve the "flouting of military authority, the security of a military post, or the integrity of military property." [33] Additionally, the court observed that military jurisdiction should be restricted to the narrowest point deemed absolutely essential to maintaining discipline among troops in active service lest "cases arising in the land and naval forces . . . as used in the Fifth Amendment, be expanded to deprive every member of the armed services of the benefits of an indictment by grand jury and a trial by jury of his peers." [34]

In these civilian-type offenses, it cannot be logically argued that there is a connection between the offender's military duties and the crimes committed or that the offenses involve the flouting of military authority, the security of a military base, or the integrity of military property. Furthermore, it cannot be seriously contended that court-martial jurisdiction over such offenses is "absolutely essential to maintaining discipline in the armed forces." Viewed objectively, the offenses are common varieties of fraud, deceit, and misrepresentation that are prosecuted almost daily in the civil courts. Moreover, if a serviceman's status, standing alone, is insufficient to vest a court-martial with jurisdiction, then reliance on that same status is insufficient to justify incursion of military jurisdiction into an area that is primarily the concern of the state. Finally, an argument that offenses of this nature adversely affect the reputation of the armed forces is as irrelevant as the same argument involving housebreaking and attempted rape.

In short, it appears that this is yet another area in which the Court of Military Appeals has labored mightily to carve out additional exceptions to the O'Callahan decision and thus permit the exercise of court-martial jurisdiction.

petty offenses

Only one case, involving the off-base offenses of drunk and disorderly conduct, has been decided in the category of petty offenses.[35] The Court of Military Appeals upheld jurisdiction on the grounds that an offense punishable by penalties not exceeding six months' confinement, as was the case here, did not require jury trial, and since the right did not exist, the O'Callahan decision did not apply as a limitation to court-martial jurisdiction. Here the court's decision, which is applicable irrespective of whether the offense is service-connected, is based upon numerous Supreme Court decisions which hold that there is no right to indictment and jury trial for petty offenses.[36]

Whether an offense is a petty offense is determined by the maximum punishment that can be imposed. For violations of federal law, the Supreme Court has ruled that an offense is not petty if it is punishable by confinement for more than six months.[37] The same question with respect to violations of state law has not been answered. In one case, the Supreme Court held that an offense punishable by two years' imprisonment was not petty but noted that all states except Louisiana, New York, and New Jersey provide for jury trials for offenses punishable by confinement for more than six months.[38] If the precise question were presented, it seems likely that the Supreme Court would require jury trial in these three states for offenses punishable by more than six months' confinement. Thus, it would appear that military jurisdiction can be properly invoked for any offense punishable by not more than six months' confinement.

Except for service-connected offenses, the purpose of the O'Callahan decision was to preserve the constitutional rights of the serviceman to indictment and jury trial. Since the right does not exist with respect to petty offenses, the question of military versus civil trial does not become an issue.

off-base civilian offenses

The remaining cases thus far decided have involved the offenses of housebreaking, larceny, burglary, murder, sodomy and indecent acts, carnal knowledge, wrongful appropriation, resisting arrest, worthless checks, attempted robbery, and rape and robbery.[39] All these offenses were committed off base, within the territorial limits of the United States, and involved civilian victims. The convictions have been set aside by the Court of Military Appeals on the grounds that the military was without jurisdiction to try the offenses. The court's reasoning has been that the civil courts were open and functioning, that these civilian offenses involved civilians not associated with the military, that there was no connection between the accused's military duties and the crime or crimes in question, and that the offense or offenses did not involve the flouting of military authority, the security of a military post, or the integrity of military property.

Since there was no discernible or significant difference between these offenses and O'Callahan's, the court held that the offenders should have been tried in the civil courts where they would have been afforded their constitutional rights to indictment by grand jury and trial by jury.

THIS REVIEW of decisions of the Court of Military Appeals reveals that the court has severely limited the effect of the O'Callahan decision on the exercise of court-martial jurisdiction. In its attempt to establish precise guidelines and its obvious effort to uphold the

exercise of court-martial jurisdiction, the court has rendered decisions in certain areas that simply do not square with the language and intent of the O'Callahan case.

If the Supreme Court's philosophy prevails —that court-martial jurisdiction should be restricted to the narrowest point deemed absolutely essential to maintaining discipline within the armed forces, it is extremely doubtful that the federal courts will uphold the exercise of military jurisdiction in all the areas carved out by the Court of Military Appeals.

In any event, this area of the law is far from settled, and in the days to come it will probably be the subject of much litigation.

Air War College

This article has been adapted from a professional study submitted by Colonel Mashburn as part of his academic work at Air War College.

Notes

1. CM 393590, unpublished, and No. 9602, 7 USCMA 800.
2. *Time*, 13 June 1969, p. 66.
3. O'Callahan v. Parker, 256 F. Supp. 679 (D.C.M.D. Pa. 1966).
4. 390 F. 2d 360 (3d Cir. 1968).
5. 393 U.S. 822, 21 L. Ed. 2d 93, 89 S. Ct. 177 (1969).
6. U.S. Const., Art. I, Sec. 8, cl. 14.
7. O'Callahan v. Parker, 395 U.S. 258, 89 S. Ct. *1683* (1969).
8. *Ibid.*, pp. 272–73.
9. *Ibid.*, pp. 273–74.
10. United States v. Goldman, 18 USCMA 516, 40 CMR 228 (1969); United States v. Weinstein, 19 USCMA 29, 41 CMR 29 (1969); United States v. Easter, 19 USCMA 68, 41 CMR 68 (1969); United States v. Stevenson, 19 USCMA 69, 41 CMR 69 (1969); United States v. Higginbotham, 19 USCMA 73, 41 CMR 73 (1969); United States v. Keaton, 19 USCMA 64, 41 CMR 64 (1969); United States v. Bryan, 19 USCMA 184, 41 CMR 184 (1970); United States v. Gill, 19 USCMA 93, 41 CMR 93 (1969).
11. United States v. Blackwell, 19 USCMA 196, 41 CMR 196 (1970).
12. Keaton, *supra.*, p. 65.
13. United States v. Williams, 18 USCMA 605, 40 CMR 317 (1969); United States v. Crapo, 18 USCMA 594, 40 CMR 306 (1969); United States v. Fields, 19 USCMA 119, 41 CMR 119 (1969); United States v. Allen, 19 USCMA 31, 41 CMR 31 (1969); United States v. Morisseau, 19 USCMA 17, 41 CMR 17 (1969); United States v. Shockley, 18 USCMA 610, 40 CMR 322 (1969); United States v. Smith, 18 USCMA 609, 40 CMR 321 (1969); United States v. Paxiao, 18 USCMA 608, 40 CMR 320 (1969).
14. Allen, *supra.*, p. 32.
15. Smith, *supra.*, p. 610.
16. Shockley, *supra.*, p. 611.
17. United States v. Quarles, 350 U.S. 11, 22, 23 (1955), 100 L. Ed. 8, 17, 76 S. Ct. 1.
18. O'Callahan, *supra.*, p. 265.
19. Redford v. Commandant, United States Disciplinary Barracks, No. 1250, 38 LW 3334.
20. United States v. Chandler, 18 USCMA 593, 40 CMR 302 (1969); United States v. Castro, 18 USCMA 598, 40 CMR 310 (1969); Chandler, *supra.*
21. United States v. Boyd, 18 USCMA 581, 40 CMR 293 (1969); United States v. Wysingle, 19 USCMA 81, 41 CMR 81 (1969); United States v. Adams, 19 USCMA 75, 41 CMR 75 (1969); United States v. DeRonde, 18 USCMA 575, 40 CMR 287 (1969); United States v. Beeker, 18 USCMA 563, 40 CMR 275 (1969); Boyd, *supra.*, Fn 34; United States v. Rose, 19 USCMA 3, 41 CMR 3 (1969).
22. Beeker, *supra.*, p. 565.
23. Rose, *supra.*, p. 4.
24. Lance Corporal (E-3) Daniel E. Maylon v. Melvin R. Laird, Secretary of Defense, John H. Chafee, Secretary of the Navy, and Brigadier General J. C. Fegan, the convening authority, Civ. A. No. 4179, U.S.D.C. D. Rhode Island (1969), 305 F. Supp. 551.
25. United States v. Camacho, 19 USCMA 11, 41 CMR 11 (1969); United States v. Reko, 19 USCMA 9, 41 CMR 9 (1969); United States v. Cook, 19 USCMA 13, 41 CMR 13 (1969); United States v. Plamondon, 19 USCMA 22, 41 CMR 22 (1969); United States v. Nichols, 19 USCMA 43, 41 CMR 43 (1969); United States v. Frazier, 19 USCMA 40, 41 CMR 40 (1969); United States v. Huff, 19 USCMA 56, 41 CMR 56 (1969); United States v. Everson, 19 USCMA 70, 41 CMR 70 (1969).
26. Camacho, Cook, and Plamondon, *supra.*
27. Everson, *supra.*, p. 71.
28. United States v. Henderson, 18 USCMA 601, 40 CMR 313 (1969).
29. United States v. Peak, 19 USCMA 19, 41 CMR 19 (1969).
30. United States v. Fryman, 19 USCMA 71, 41 CMR 71 (1969).
31. Morisseau, *supra.*
32. United States v. Hallahan, 19 USCMA 46, 41 CMR 46 (1969).
33. O'Callahan, *supra.*, p. 274.
34. *Ibid.*, p. 272.
35. United States v. Sharkey, 19 USCMA 26, 41 CMR 26 (1969).
36. Bloom v. United States, 391 U.S. 194, 20 L. Ed. 2d 522, 88 S. Ct. 1477 (1968).
37. Frank v. United States, 395 U.S. 147, 23 L. Ed. 2d 162, 89 S. Ct. 1503 (1969).
38. Duncan v. Louisiana, 391 U.S. 145, 20 L. Ed. 2d 491, 88 S. Ct. 1444, Fn 33 (1968).
39. Camacho, *supra.*; Chandler, *supra.*; United States v. Riehle, 18 USCMA 603, 40 CMR 315 (1969); United States v. Cochran, 18 USCMA 588, 40 CMR 300 (1969); United States v. Armes, 19 USCMA 15, 41 CMR 15 (1969); Chandler, *supra.*; Camacho, *supra.*; United States v. Armstrong, 19 USCMA 5, 41 CMR 5 (1969); Shockley, *supra.*; United States v. McGonigal, 19 USCMA 94, 41 CMR 94 (1969); United States v. Borys, 18 USCMA 545, 40 CMR 257 (1969); Henderson, *supra.*; United States v. Prather, 18 USCMA 560, 40 CMR 272 (1969); Prather, *supra.*; Williams, *supra.*; Crapo, *supra.*; Borys, *supra.*

THE UNITED STATES AND THE CARIBBEAN

Dr. Raymond J. Barrett

A GLANCE at a map shows why the United States has always been closely concerned with the Caribbean. The American interest in the Caribbean has many facets, and new dimensions are now being added. The common concerns of the United States and the Caribbean lands continue to increase and warrant careful attention.

Historically, the United States has been actively involved in and concerned about the Caribbean. The area has always played a key role in the Western Hemisphere. It was the scene of Columbus's voyages of discovery and the jumping-off place for most of the Spanish conquistadors. One of the main areas of European settlement in the New World was in and around the Caribbean basin. It became a rich source of sugar, indigo, spices, and other highly valued tropical products. The lifelines of the immense Spanish empire converged on the Caribbean Sea, and the imperial treasures became the glittering objects of the legendary struggle between the British buccaneers and the Spanish. Many of the Caribbean lands, Jamaica for one, were valued more than the colonies along the Atlantic coast of the North American mainland. The Caribbean lands were important objectives in the recurrent European struggles, and many changed hands as the tides of imperial conquest shifted.

Even before independence, there were growing ties between the American colonies and the Caribbean lands. The complementary climates produced a natural exchange of goods that led to increasing trade among the colonies despite British mercantilist doctrines. In fact, the British efforts to suppress this trade constituted an important practical element among those disputes that produced the American Revolution. After independence, the era of American sailing ships and Yankee traders produced a further vigorous commercial intercourse between the new U.S. and the Caribbean.

American interest in the Caribbean became very direct after the purchase of the Louisiana Territory in 1803. For this vast new continental heartland of the United States, the economic lifeline was the Mississippi waterway and through the port of New Orleans to the outside world. The Caribbean islands lay directly across the access routes to the open seas and the world beyond. American administrations frequently exhibited great sensitivity about the Caribbean lands.

Some of the most pre-emptory episodes in American diplomatic history stemmed from concern about possible intrusions into the Caribbean basin. As early as 1808, the Jefferson Administration made clear its opposition to the transfer of Cuba to either France or Great Britain. Concern about the Caribbean was an important element behind the enunciation of the Monroe Doctrine. President Pierce tried to get control of Cuba, and the Grant Administration came close to annexing what is now the Dominican Republic. One reason behind the Clayton-Bulwer Treaty of 1850 was the desire to limit British hegemony in the Central American isthmus, which had become important for transit to California. Presidents Cleveland and Theodore Roosevelt reacted very strongly to what they felt were European efforts to pressure Venezuela. American activities such as these were hardly benevolent, but their very forcefulness and self-centered character demonstrate the strength and sensitivity of American concern regarding the Caribbean.

The American concerns became an expanded geographic presence as the nineteenth century gave way to the twentieth. In a sense, the Spanish-American War represented a culmination of the earlier American sensitivity regarding the Caribbean islands. The acquisition of Puerto Rico extended the American presence well out into the curtain of islands, in a position to dominate the rest of the Antilles. Cuba, through the Platt Amendment of 1901, became virtually an American protectorate. A naval base, under exclusive United States jurisdiction, was retained at

Guantánamo on the southeast coast.

The construction of the Panama Canal represented an enormous increase in the American presence in the Caribbean basin. The high-handed way in which it was done and the complete nature of American control once again testified vividly to American concern regarding the Isthmus's key connecting role between the two littorals of the United States. The American interest had earlier manifested itself in a survey made in the 1850s by Ulysses S. Grant and the subsequent construction of the transisthmian railroad. The presence of the Canal and the heavily traveled trade routes that it engendered greatly increased United States interest in the Caribbean.

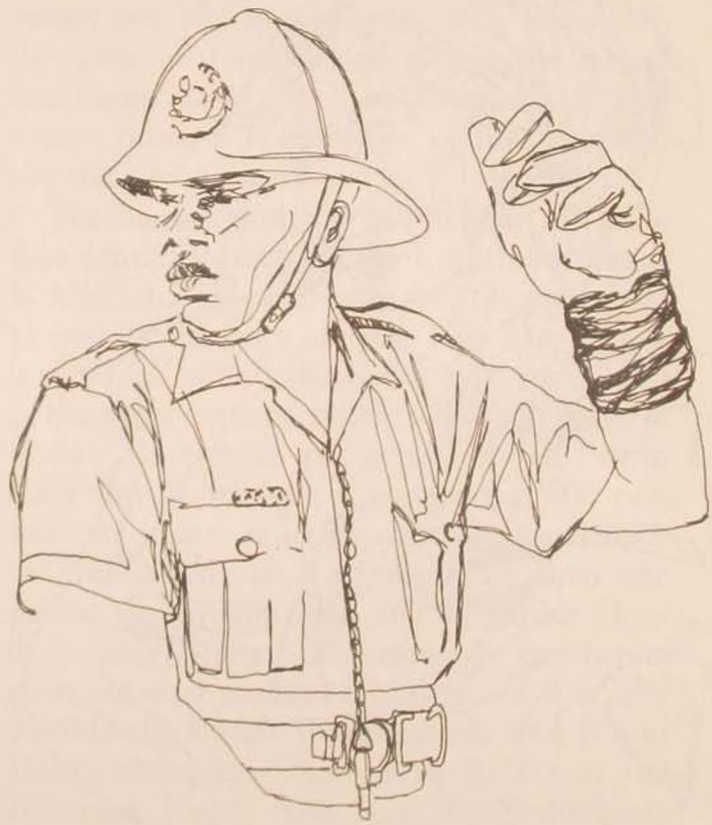
Over the years the United States has continued to react to what it perceived as threats to the security of the Caribbean and the Panama Canal. Marines were landed in Haiti,

the Dominican Republic, and Nicaragua for what turned out to be lengthy occupations. To counter what was thought might be a wartime flaw in the area's defenses, the United States in 1917 hastily acquired the Danish Virgin Islands to ensure that they were not obtained by imperial Germany. Base rights in Trinidad were an important part of the famous destroyers deal with Great Britain in 1940, a principal justification for these facilities being to provide coverage of the southern routes through the Caribbean islands toward the Panama Canal. Also during World War II the United States kept a wary eye on Martinique and Guadeloupe when these French islands in the West Indies were in Vichy hands; the U.S., in fact, was ready to seize them by force if necessary to preclude their use for purposes deemed unacceptable. As recently as 1962 and 1965 the United States moved forcefully to eliminate Soviet offensive missiles from Cuba and to prevent exploitation of chaos in the Dominican Republic.

Strategically, as these historical developments indicate, the United States has been and continues to be most interested in the Caribbean. Obviously it is essential to ensure that inimical forces are not allowed to obtain additional bases and areas of operation on this doorstep of the United States. Peaceful development in the area and avoidance of conflict or arms competition are similarly in the United States' strategic interest. These goals are essential to our commitment to meaningful human progress and to our national security; instability and violence would increase the opportunities for outside exploitation inimical to American interests. There are a number of practical concerns that have strategic consequences: the many Americans living or visiting in the Caribbean; American investments; the supplies of important materials, such as bauxite for aluminum, manganese, etc.; products such as bananas, certain varieties of coffee, etc.; and the heavy flow of trade and vessels through the Panama Canal. These considerations establish a priority strategic requirement for the United States to protect the Caribbean basin in peace or war.

The geography and climate of the Caribbean also increase the military importance of the area to the United States. The Caribbean area provides the most expeditious access from the United States to South America; continuation of air routes and bases in the Caribbean is important to facilitate American mobility if the South American nations should require assistance in dealing with internal or external aggression. The warm climate of the Caribbean makes ready access to it highly useful for training, maintenance, and research by American military forces. The military facilities in the Caribbean are thus important in many ways for maintaining effective American military forces.

The growing attraction of Americans to the Caribbean lands is adding another dimension to the interests of the United States in the



Constable directs traffic - Kingston, Jamaica

area. To many Americans, "the Caribbean" probably conjures up visions of sunshine, sandy beaches, sparkling waters, balmy evenings, and the other joys of indolent tourism. Anyone who watches the television commercials is well aware of the lures of tourism and warm weather residence in the Caribbean. Not only is the number of American visitors swelling rapidly but so is the number of American citizens who have retired or otherwise established residences in the Caribbean area. Many of the new facilities being established to accommodate this influx are being added or financed by Americans, thus increasing the American investment in the Caribbean. Sheer numbers and dollars aside, an American presence of this magnitude produces a much wider American involvement, culturally, psychologically, economically, and socially. The interconnection between the United States and the Caribbean is becoming steadily larger, closer, and more complex.

Calypso dancer - Trinidad

THE United States also has a sympathetic interest in the political and economic evolution taking place in the Caribbean. The aspirations of the Caribbean peoples for control of their own destinies and for social and economic progress are in accord with fundamental American principles. As a practical matter, too, their peaceful development is important to American interests. It is noteworthy that the change in the Caribbean to date has been largely peaceful. While a good deal of incipient tension exists, the prospects are improved by the fact that the barriers to social mobility are often not great. Another hopeful indicator is that in most Caribbean lands the racial majorities are already in control, with the opportunity to work out their own destinies.

The Caribbean is witnessing several pioneering political and economic efforts. Four countries in the area have become independent in recent years. These are Jamaica, Trinidad and Tobago, Barbados, and Guyana (formerly British Guiana). The French and Dutch territories have been assimilated by the homelands: Martinique, Guadeloupe, and French Guiana are overseas departments of France, and the Netherlands Antilles and Surinam are internally autonomous and constitutionally equal in the Kingdom of the Netherlands. An interesting experiment in self-government is under way in some of the smaller territories in the Caribbean, known as the Associated State concept. These lands are tied to the United Kingdom but are internally self-governing. There are now six Associated States: Antigua, Dominica, Grenada, Saint Kitts-Nevis-Anguilla (modified by the recent dissatisfaction in Anguilla), Saint Lucia, and Saint Vincent. The Bahamas have achieved a comparable status but call themselves a commonwealth. British Honduras also is in transi-

tion toward associated statehood or independence. Not to be overlooked, either, in terms of political and economic experimentation, is Puerto Rico, now a commonwealth associated with the United States, and its economic progress under Operation Bootstrap. The arrangements governing the Associated States and the Bahamas allow them to opt for independence if they so desire; at present, Puerto Rico does not have this power.

The topic of political change is a sensitive one. The working out of their own destinies is the prerogative of the peoples of the Caribbean. They are well aware of the shadow of the American giant, which most of them accept realistically. But they are very conscious of having just left colonial status. Many elements in these lands also deeply resent the past and the continued affluence and influence of whites in their midst. The Caribbean peoples, in short, are not about to allow themselves to become, or to feel that they have become, beholden to another master. It is in this sense—in the achievement of viable and peaceful arrangements that fulfill Caribbean aspirations—that the United States has a legitimate and sympathetic interest in the political development now in process and likely to continue in the Caribbean.

Similarly, and realistically, the United States cannot help being aware of the difficulties in the Caribbean. A primary point to note immediately is the great diversity in the area. Looking southward from the United States, and having climate and tourism in mind, we tend to think of the Caribbean as an entity. The Caribbean basin is not nearly as compact as a casual glance at the map might suggest. The distance across the basin, from British Honduras to French Guiana, is about 2700 miles, or close to the continental width of the United States. Two of the Dutch territories, Aruba and Surinam, are more than a thousand miles apart. The Caribbean lands also differ greatly in size. Many of them are handicapped by their small size, particularly of arable or

Spectators at cockfight - Puerto Rico

habitable land. Anguilla, which proclaimed during the recent disturbances there that it wanted to be independent, is only 35 square miles in area. Barbados, which is independent, covers but 166 square miles, only one-eighth the area of Long Island. Even the largest Caribbean land, which is Guyana at 83,000 square miles, is but the size of Idaho or half the size of Sweden.

The human diversity is also great. Population density in most of the Caribbean islands is high; in the territories on the mainland littoral the densities are very low. The density is very high on little Barbados, with some 1445 persons per square mile (the equivalent of almost 2½ persons per acre), and in Puerto Rico and Martinique it approaches 800 persons per square mile. By contrast, the density in French Guiana is hardly more than one person per square mile, and in British Honduras only twelve. The range in per capita gross national product is also great: it is only $120 in the British Virgin Islands and $70 in Haiti, while it is more than $1000 in the Bahamas, Puerto Rico, and the Netherlands Antilles. The literacy rate is surprisingly high in comparison to most of the developing

countries of the world—generally 80 to 90 percent, and in fewer than one-quarter of the Caribbean lands is it below 70 percent. Only in French Guiana and Haiti is the literacy rate low.

Another element in the human diversity is the linguistic and racial variety. The English, French, Dutch, and Spanish languages were inherited from the colonial powers. However, in many places the people actually use a dialect or patois very different from the official language. Among these local tongues are Papiamento, French Creole, Taki-Taki, and Creole English. While the black race predominates in most Caribbean islands, the racial composition varies considerably. In addition to the Negroes and various European and American whites, there are Bush Negroes, mulattos, and East Indians and Amerinds of various types. In some lands, notably Guyana, the East Indians appear to be, or to be approaching, a majority. One can imagine the varieties and complexities of linguistic, racial, social, and cultural considerations to be accommodated within and among the Caribbean lands.

Numerous economic difficulties confront almost all the countries of the Caribbean. Natural resources are low, and most of the countries depend heavily on a few products. Their trading patterns, reflecting their colonial histories, focus on the metropoles. Many of them still have a considerable financial dependence on the metropolitan powers. France and the Netherlands provide a high level of assistance to the French and Dutch territories. The United Kingdom provides budget support for many of the Associated States and direct financial assistance in the British colonies; it also offers preferences and markets for sugar, bananas, and citrus fruits. With generally low levels of income, most of these countries have inadequate domestic markets and limited financial sources. The supply of professionally and technically trained people is similarly limited.

The most difficult aspect of the economic problems is the chronic and large-scale unemployment. The unemployment rate ranges around 10 to 15 percent in virtually all areas. Only in the American Virgin Islands, with 3.4 percent, is unemployment as low as the rates generally considered tolerable in the United States. In four Caribbean lands the unemployment rate exceeds 20 percent. This situation has traditionally been alleviated by large-scale emigration; in some areas the emigration in the postwar era has been equivalent to more than a quarter of the entire population. However, the two main escape routes have been closed; recent changes in the immigration laws in the United Kingdom and the United States have reduced to a trickle the number of people able to move to those countries from the Caribbean. Furthermore, over a third the population in the Caribbean is now in the 2- to 14-year age bracket; the numbers of those looking for work and needing support will thus increase sharply in coming years. The unemployment problem threatens to get worse.

THE United States thus has a variety of wide-ranging and important interests in the Caribbean and, therefore, in the continued peaceful development of the region. Certainly more change will occur. Difficult problems lie ahead. Will the Associated State concept continue to evolve? If so, how? And can it be viable in the long run? What will be the future of the remaining colonies in the area? What will be the complications in terms of such things as sugar, investment, tourism, and trade patterns when Cuba finally returns to the American family of nations? How might the relationships between the Organization of American States and the Caribbean lands evolve? What might be the role of the OAS in the region?

What role regionalism will play could be important. Efforts in the past to form regional organizations, such as the British-inspired

Federation of the West Indies, 1958–62, have not been notably successful. The diversities in the Caribbean make the question of regional approaches a sensitive one. However, on a pragmatic basis, some cooperation is under way in a few specific areas. The University of the West Indies survived the demise of the Federation of the West Indies and continues to serve the British Commonwealth areas. A Caribbean Free Trade Area has come into being, and a Caribbean Development Bank is being established. Conceivably, areas of common interest, such as tourism, transportation, and communication, may lead to other areas of regional cooperation.

Economic viability seems essential to reasonable prospects for peaceful development. The metropole powers seem inclined to continue their aid programs. Canada has taken a considerable interest in the Caribbean and has an aid program under way. Continuation of modest aid from the United States seems desirable. Economic discontent can be emotional and destabilizing. When discontents manifest themselves, the United States and things American are obvious targets.

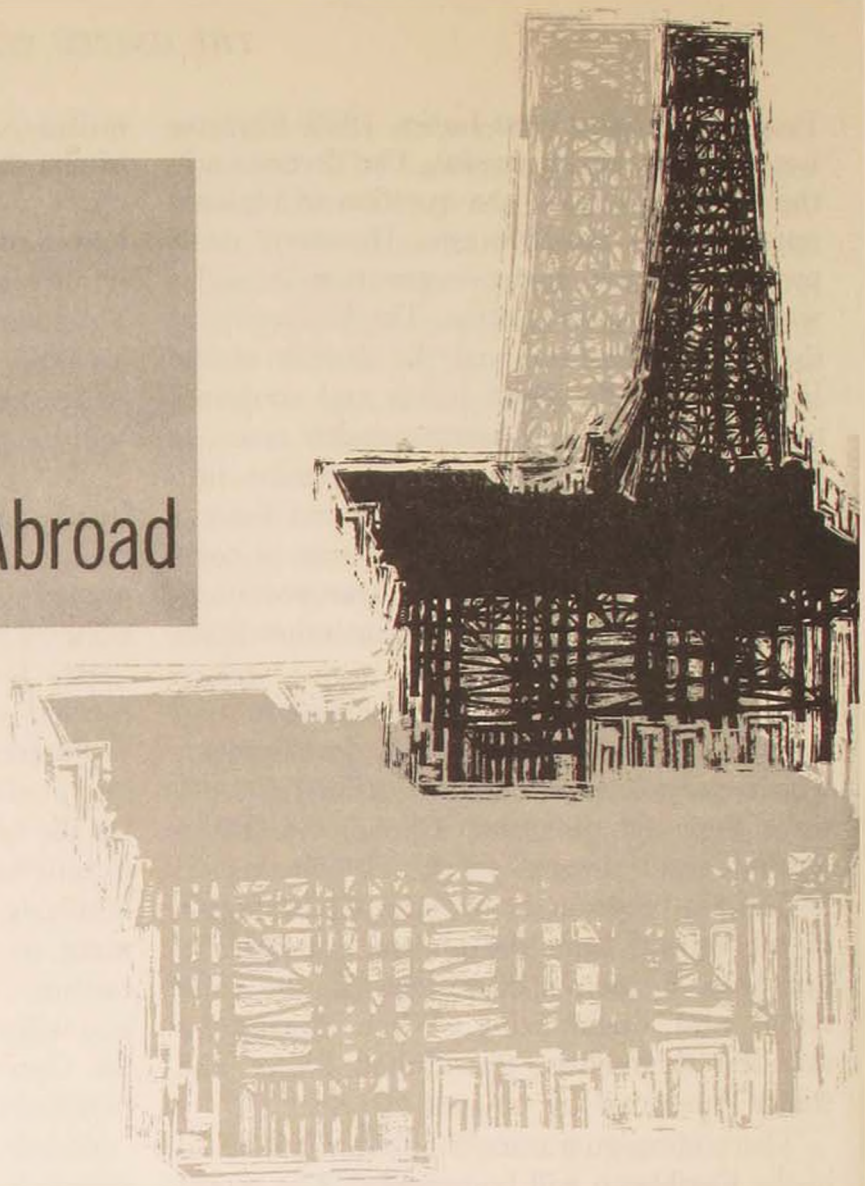
There is no guarantee that the road ahead in the Caribbean will be peaceful. The recent disturbances in Trinidad, Anguilla, and Curaçao indicate the problems that are often not far below the surface and demonstrate how quickly difficulties can flare up. The coming of the Castro regime in Cuba and the 1965 chaos in the Dominican Republic illustrate how profoundly United States interests can be threatened by difficulties in the Caribbean. Protection of American interests will require a careful and perceptive approach.

The logic of geography places the Caribbean within the ambit of American protection against attack or subversion from outside the hemisphere. The growing number of Americans in the area may increase the need to evacuate American citizens if trouble should occur. Unilateral intervention by the United States is indicated only when a well-documented external threat or subversion clearly endangers vital U.S. interests and a multilateral effort is not feasible. Military assistance for the armed forces in the area seems limited to internal security needs in selected instances. Similarly, some technical assistance and equipment for the police may be indicated. The existing American military installations are and will continue to be valuable, and certainly the Caribbean will remain highly important to the national security of the United States.

Constructive change in the Caribbean is obviously most desirable. The changes under way are profound. Clearly, concern and understanding will be crucial for both the Caribbean lands and the United States.

Arlington, Virginia

Military Affairs Abroad



THE SOVIET NEED FOR MIDDLE EAST OIL

MAJOR EUGENE J. DENEZZA

TODAY oil is the world's most important fuel, and it is likely to remain so for many years to come. To the modern nation-state, oil is essential in both peace and war. Only a very few countries could long live satisfactorily or fight effectively if deprived of outside sources of supply of oil.

By far the most important single source of oil is the Middle East. It produces just over one-quarter of the world's oil and shelters underneath its soil almost two-thirds of the world's oil reserves. If we exclude the United States and the Soviet Union, both of which presently produce as much as they need, the Middle East has an overwhelming 75 percent of the world's reserves and 46 percent of its production. Just over half of the oil entering international trade comes from the Middle East, while another 13 percent comes from North Africa. The extent and significance of Middle East oil are clearly illustrated by the fact that in 1968 Saudi Arabia alone increased its reserves by nearly 1250 million metric tons (MMT). This is almost as much as the current hopes for the whole Alaskan north slope. The recent discoveries in Alaska caused a sensation; the Arabian finds are considered routine.

The United States has a very important interest in access to Middle East oil. In addition to U.S. investments of over $3 billion and annual revenues of $1.7 billion from these investments, the United States government recognizes that

> The Middle Eastern "wells of power" . . . supply West Europe with half of its requirements, and Japan with 90 per cent of her needs. Denial of access might well cripple important allies of the United States.[1]

The industrial power closest geographically to the Middle East is, of course, the Soviet Union.

The Russians have had an interest in the Middle East since the time of Peter the Great. Their objectives in the area have centered on securing warm-water ports on the Mediterranean; protecting Russia's southern flank; and, more recently, gaining a strategic door to the Indian Ocean. Yet Soviet interest in the strategic oil of the Middle East has been discounted as an important factor in determining Soviet objectives in the area. This conclusion by many Western political analysts has been based for the last decade on the assumption that, in view of the rapid development of the Soviet oil industry and the comparatively slow increase of Soviet-bloc oil consumption, the U.S.S.R. has and will continue to have no need for outside sources of oil, such as the Middle East. That this assumption became almost axiomatic is illustrated by a statement in a 1966 survey of great-power interests in the Middle East, that "Soviet interests in the Middle East do not include an interest in oil." [2]

Seemingly bearing out this assumption is the fact that in 1968 the U.S.S.R. ranked second in the world in the production of oil, exported approximately 80 MMT of crude oil and petroleum products, and claimed over five billion metric tons of proven reserves. In addition, the Soviet Union possessed at least fifty percent more unexplored land geologically favorable for the accumulation of oil than the U.S., including Alaska. However, information underlying these statistics strongly suggests that such a conclusion is premature. For example, the growth rate of Soviet oil surplus and exports has been slowing appreciably since 1962 and even more significantly since 1965. In 1969 an article in *World Oil* stated:

> Russian crude production—up 7% in 1968—is not expanding fast enough to match the Soviet Union's own increasing oil needs, those of satellite countries or to provide a surplus for sale to the free world . . . the entire exportable surplus of the Soviet Union in 1970 is estimated to be 1.2 million barrels per day (60.8 MMT).[3]

If this prediction was accurate, then Soviet exports, which leveled off in 1969, probably dropped 25 percent in 1970. An article in *Soviet Studies* predicted that by 1980 "the Soviet Union might be forced to import oil, even if production of oil continued its present eight per cent a year growth." [4]

These forecasts, coupled with the Soviet Union's powerful position in the Middle East and recent interest in its oil, indicate that the U.S.S.R. may soon need Middle East oil to satisfy internal needs. To either affirm or refute these indications, I made a detailed analysis of the Soviet and Eastern European oil situation in the next decade, with both supply and demand predicted or compiled for 1980.* For this article, I have summarized those estimates.

demand for oil in the Soviet Union

On the basis of my study and analysis, I estimate that the oil consumption of the U.S.S.R. will increase from 266 MMT in 1970 to 600 MMT in 1980. Some recently published estimates of Soviet 1980 oil consumption are pertinent for comparison purposes:

	million metric tons
O.E.C.D.[5]	613—700
Stanislaw Wasowski [6]	560**
Oil and Gas Journal [7]	562
World Oil [8]	583
Mizan [9]	560
Christopher Tugendhat [10]	560
Soviet 1966 Plan [11]	377

All estimates are quite close to the 600 MMT estimate except for the Soviet 1966 Plan, which was out of date when published.

demand for oil in Eastern Europe

Several excellent estimates of the 1980 demand for oil in Eastern Europe have been made, and they predict consumption figures as follows:

	MMT
Stanislaw Wasowski [12]	190
Stanislaw Albenowski [13]	170
Christopher Tugendhat [14]	170
Oil and Gas Journal [15]	134
World Oil [16]	128

* Details as to the prediction techniques used, the assumptions made, and the predictions themselves are contained in my study entitled "The Soviet Union and Middle East Oil," Air Command and Staff College Research Study 70–0410, Maxwell AFB, Alabama, 1970.

** Wasowski considers this the minimum; it assumes 7 percent consumption growth.

From the rationale behind these figures, it appears that an estimate of 170 MMT for Eastern Europe's 1980 oil needs is realistic and conservative.

Soviet oil supply, 1980

The Soviet 20-year program, published in 1960, placed the 1980 oil production goal at from 690 to 710 MMT. This was modified in 1967 to 630 MMT. Generally, most Western sources estimate that the Soviets should produce approximately what they forecast:

	MMT
Stanislaw Wasowski [17]	630
Christopher Tugendhat [18]	630
World Oil [19]	557
U.S. Department of Interior [20]	600

The qualifying remarks that accompany these estimates, however, indicate some skepticism. Tugendhat, for example, states:

> These figures should be treated with reserve, for like the rest of us, the Russians do not always achieve their economic targets. Nevertheless, they are within the bounds of possibility.[21]

World Oil reports:

> Russia hopes to produce from 12–12.6 million bpd (610–630 MMT) by 1980 (a more realistic estimate would be 11 million bpd [557 MMT]).[22]

The major reasons for this underlying pessimism seem to be three: First, the attainment of the Soviet objective requires that approximately one-third of the target come from the new fields in western Siberia. This would require production in Siberia to rise from the current level of 20 MMT to 230–260 MMT in 1980. This is an extremely ambitious goal, considering that the oil-producing region of western Siberia is composed mainly of lowlands covered with forests and marshes. In the long winter, the temperature often remains around −50°F, and blizzards are common. In the summer, living conditions are equally uncomfortable because of mosquitoes and the hot, muggy days.

Second, Russian oil production costs are increasing, and a major shift in production to Siberia would further increase the cost. Production costs in the U.S.S.R. in 1967 averaged about fifty cents a barrel. If one-third of the production shifts to western Siberia, increased production and transportation costs could easily raise the Soviet average to one to two dollars a barrel. Note that the average cost of Middle East oil in 1967 was 15 cents a barrel. This cost situation may induce the Soviets to look elsewhere for oil, rather than attempt to meet their goal of 630 MMT in 1980.

Finally, the Soviets may have trouble meeting their target because of poor management of the oil industry. Lincoln Landis of the Center for Strategic Studies refers to "serious endemic defects in its [the U.S.S.R.'s] totalitarian and centralized industrial system," [23] while the *New York Times* attributes oil production problems to "poor resource management." [24]

While these three considerations must be kept in mind, the analysts still consider a 1980 Soviet oil production estimate of about 630 MMT as realizable. Therefore, with reservations, 630 MMT constitutes our estimate of the 1980 Soviet oil supply.

Eastern Europe supply—1980

In 1968 Eastern Europe's production of oil provided only 38 percent of its internal needs. Analysts estimate that by 1980 the percentage will get appreciably worse. Typical estimates of 1980 Eastern European (E.E.) oil production include:

	MMT
Stanislaw Wasowski [25]	30*
Christopher Tugendhat [26]	30
Walter Laqueur [27]	30

There is, as can be seen, virtual unanimity that production in 1980 will be 30 MMT.

THE ESTIMATES developed can now be consolidated to form the basic data necessary for a re-evaluation of the assumption of Soviet self-sufficiency in oil.

	MMT
1980 Soviet oil consumption	600

* Wasowski reports that "various estimates of the level of production in 1980 range from 23 to 33 MMT a year."

1980 Soviet oil production ------	630	
Projected surplus ----		+30 MMT
1980 Eastern European consumption ----	170	
1980 Eastern European production ------	30	
Projected deficiency --		−140 MMT
1980 Soviet & E.E. consumption ----	770	
1980 Soviet & E.E. production ------	660	
Combined projected deficiency ---------		−110 MMT

Thus the estimates indicate that the combined Soviet and Eastern European oil supply will not satisfy their combined consumption. The combined surplus is estimated to turn into a deficit in 1974. By 1980 the Communist countries could easily absorb oil imports of 110 MMT to satisfy internal requirements.

Satisfying the Oil Need

At the present time the Soviet Union produces about 80 MMT of oil over and above its internal needs. With this exportable surplus, the Russians are realizing two major benefits. First, the U.S.S.R. all but monopolizes East Europe's oil supply, thereby securing significant political leverage in the area. Second, sorely needed foreign currency, raw materials, and industrial products are secured by selling some 48 MMT of petroleum and petroleum products to the free world.

However, according to the above estimates, this situation will change radically. By 1980 it will be impossible for the Soviets to either monopolize Eastern Europe's oil supply or provide even the present amount of oil to their free world markets. Four courses of action are open to the U.S.S.R. to resolve this situation:

1. Restrict internal consumption and/or increase production significantly. The Soviet Union is presently curtailing internal consumption by utilizing uneconomical coal products, limiting automobile inventories, etc. Most experts feel that the U.S.S.R. not only cannot increase these restrictions but will also have to ease the present restrictions. To increase production above the 630 MMT estimated for 1980 would be equally difficult. As noted earlier, the ability of the U.S.S.R. to meet the present goal has generated skepticism both in the West and in Russia itself.

2. Relinquish the monopoly on Eastern Europe's oil supply and allow the satellites to secure their own sources of supply. While this course is a possibility, most observers feel that the prospect of a course of action that would result in increased East European independence would be against Soviet policy and thus highly remote. Robert W. Hunter, of the Institute for Strategic Studies, noted:

> Oil supply seems to be one control which the Soviet Union is trying to develop in order to maintain, or even increase, the interdependence of the Comecon states and so limit their economic links with the West. . . . growth in Eastern Europe's demand for external supplies of energy is another measure of the strong incentive for the Soviet Union to find new sources of oil when her own become inadequate. In fact, present evidence of her interest in obtaining Middle East oil may be explained by the Soviet desire to play a dominating role in the East European energy markets during the next few years.[28]

3. Discontinue sales to the free world. This alternative also appears quite remote. Oil is second only to machinery as Russia's most important export, giving the Soviets sorely needed foreign exchange and other trade. In addition, the establishment of the free world markets required a substantial Soviet investment (capital facilities, companies, tankers, pipelines, etc.), which they would be loath to lose. Recent expansion plans in Russian oil-marketing firms in England, Belgium, and West Germany even indicate that the Soviets may be expanding their free world markets. Hunter has summarized the reasons why the Soviets will not select discontinuance of sales to the West as a solution to their oil problem:

> Now that these Western markets are being firmly established, along with markets (and especially the pipelines) for natural gas, there are developing considerable incentives for the Soviet Union to retain them, even if she must eventually find external sources of supply to fulfill existing contracts. When their own domestic sources of oil

> fall behind internal demand, there will be advantages for the Russians if they can acquire major external sources of "rouble oil" to be marketed in Western Europe for hard currencies even though the costs of exploiting these sources would also have to be paid in hard currencies. Such advantages would be similar to those enjoyed by Britain and the United States in being able to obtain "sterling" and "dollar" oil from the Middle East as a welcome source of foreign exchange.[29]

4. *Acquire outside sources of supply.* This last possibility seems to be the most logical choice for the Soviets, and their recent activities strongly support a contention that they have adopted, as a policy goal, the acquisition of Middle East oil supplies. Up to the middle sixties, Soviet interest in Middle East oil was political and negative, i.e., it attacked Western oil companies and Western governments but did not itself attempt to secure any oil or oil concessions.

After 1965 the attitude of the Soviets changed. The turning point came in 1966 with the signing of a comprehensive Soviet-Iranian agreement that included payment for Soviet aid by shipments of natural gas via pipeline to the U.S.S.R. Since then the Soviets have secured permission to explore for oil in certain areas of Iran; to assist in the development of the Syrian oil fields in Jezera province; and to aid the Egyptians in developing the Servah oasis deposits near Libya. The most significant contract was concluded with Iraq in 1969. Of this deal Ruth Knowles commented: "the Soviets were able to pull an economic *coup d'état.*" [30] Under a series of agreements, the Soviets, without obtaining any territorial concessions in Iraq, will assist the Iraqi government in putting the large and famous North Rumalia fields under production, payment for the Russian help to be in oil.

It is important to note that in all these deals the U.S.S.R. is securing Middle East oil without the expenditure of hard currency; to do so would be inconsistent with her desire to export to West Europe to acquire hard currency. Instead the Soviets are using barter agreements, service contracts, royalty payments in rubles, and even marketing assistance, to secure oil. The Middle East nations' extensive need for products, arms, assistance, etc., should allow the Soviets to continue such agreements for the foreseeable future, to secure the required amounts of oil.

THE INABILITY of the Soviets either to restrict their future consumption significantly or increase their future production economically, coupled with their desire to continue to supply oil to both East and West European markets, requires that they secure outside sources of oil. Specifically, their past activities suggest that they will attempt to satisfy their increasing requirements with Middle East oil. The Middle East is a natural and obvious choice. Middle East oil is extremely cheap in comparison with that produced in the U.S.S.R. The territorial contiguity allows transport of oil by pipeline to the Caucasus oil complex of the U.S.S.R. quite cheaply. Upon arrival in the Soviet complex, it could be used internally or transported to Soviet European markets by the same modes presently used for Soviet oil.

A reasonable estimate of the scope of outside supply would be 200 MMT by 1980; of this, 110 MMT would be for Soviet and East European use, the remainder for resale to free world markets.

Some observers see great benefit in this Soviet need for Middle East oil, but alluding to the possibility of widespread stability as a result of Soviet interest, Jean-Jacques Berreby, in *The New Middle East,* noted:

> These arguments are far from convincing, to say the least. The Communist countries can certainly get all the oil they need from certain countries in the Middle East and North Africa while at the same time encouraging the opposition in countries from which the West is drawing its supplies, as in Saudi Arabia and Kuwait.[31]

It would also be a mistake to envisage the Soviet need for oil as resulting in extreme policies. It should be noted that 110 to 200 MMT of oil is neither a significant enough need nor a large enough demand that the Soviets could not easily afford to procure it and the Middle East easily supply it. Therefore, to expect the Soviets, for 200 MMT of oil, to adopt a policy either of influencing the Middle East countries to nationalize their oil or of a Soviet or satellite

regime take-over is unrealistic. To put the Soviet need for 200 MMT of oil in perspective, one should consider that Western Europe imported 253 MMT and Japan 132 MMT from the Persian Gulf area in 1968, to say nothing of their 1000 MMT estimated requirement by 1980. Therefore, it seems likely that the Soviets will pursue two major policy goals: the first will be to secure the required amount of oil from the Middle East by commercial means at the cheapest possible price; the second will be to insure that the required oil supply is stable and uninterrupted by local conditions. It would appear that the Soviet Middle East oil sources of supply will become an increasingly important consideration in shaping Soviet policy in the area. But it is unlikely that the Soviet need for oil will be a decisive factor in shaping the Soviet Middle East policy.

A clear-cut distinction should be made between Soviet policy directed toward securing and insuring a supply of Middle East oil to satisfy U.S.S.R. requirements and Soviet policy toward Middle East oil in general. If the Soviet Union did achieve control over Middle East oil, she could seriously hurt the economies of the United States and its allies and exclude or threaten to exclude many countries from access to their oil supplies. Much has been written lately about Europe's emancipation from dependence on Middle East oil by discoveries in Alaska and elsewhere. It is more truthful to state that Europe can do without Middle East oil, at great expense, for only a six- to nine-month period. Therefore, it is conceivable that the U.S.S.R. may actively attempt to bring about the nationalization of oil by governments dominated by Moscow. It is even conceivable, but less likely, that the Soviets may attempt to set up satellite regimes on the East Europe model. However, if they take such actions, it will be to support a national goal over and above securing and insuring oil for their internal needs.

In any event, the Soviets do have an interest in Middle East oil, and the West can no longer afford to ignore it. Soviet interest in Middle East oil must be added to their traditional interests in the area.

Fairborne, Ohio

This article was adapted by Major DeNezza from a study accomplished as part of his academic work at Air Command and Staff College.

Notes

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6. *Ibid.*
7. "Forecast for the Seventies," *Oil and Gas Journal*, November 10, 1969, p. 159 (hereafter referred to as "The Seventies").
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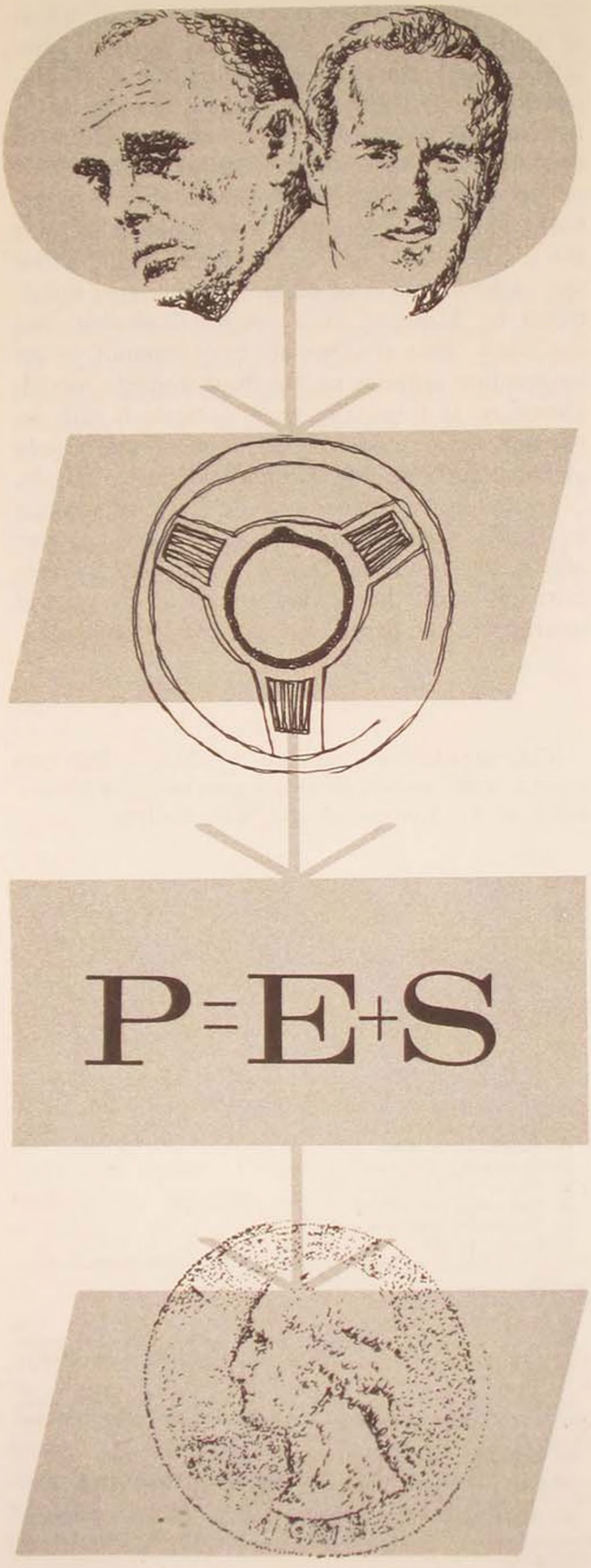


TWO BITS' WORTH ON COMPUTERS, GENERATION GAPS, AND MANAGEMENT

Major Eugene P. Wagner

A "BIT" in computer parlance is the smallest unit of information with which a computer operates. A "generation gap" is a concept not yet defined by Webster and for which an "understood meaning" has not been reached by consensus. Deductively then, this article contains a little bit about a subject too complex to understand —all of which doesn't make a lot of sense until put into the frame of reference of the computer in the modern management environment. And, in this management environment a "happening" is going on that needs to be examined.

The story is told of the young boy who wandered into a blacksmith shop and was immediately intrigued by the glowing, red-hot horseshoe being heated in the coals. The blacksmith instinctively cautioned the youngster not to touch the horseshoe. This only piqued the youngster's curiosity. He picked up the horseshoe, and with lightning reaction he dropped it. To this the blacksmith chided, "Got burnt, didn't ya?" After a moment's reflection, the boy replied, "No, it just doesn't take very long to look at a horseshoe."

And so it is with the "management happening" we need to look at: it doesn't take very long to realize that there is a message to be learned.

The Air Force is getting younger with each passing day; that is, the mean age of the average Air Force member is falling at a rapid pace. Yet we have as our senior management group personnel who entered the service during World War II and the Korean conflict. Relative to the computer, two distinct management groups have been generated. On one end of the spectrum is the young lieutenant or captain, by requirement a recent college graduate, who is most likely schooled formally in computer fundamentals and management-science techniques such as linear programming, multiple regression, modeling, and simulation. The epitome of this group can be seen as a young captain with a master's degree in mathematics, econometrics, computer science, or operations research, assigned to the planning and analysis directorate of the Air Staff or major command headquarters. His objective is to use his "technological tools" to quantify and mathematically optimize information to help provide top-level management better intelligence as a basis for decision-making. He uses his slide rule, management-science techniques, and the computer simply as tools to help get the job done in an optimal fashion. Accordingly, this young specialist has been dubbed with such labels as "industrial carpetbagger," "slide-rule weenie," "whiz kid," "technocrat," etc. More important is the fact that this young technocrat has no hang-up about applying these modern management tools. It must also be remembered, however, that he doesn't have the seasoned experience that our senior managers have in understanding and handling real-world practical problems. The senior traditional manager is a professional, too, additionally educated in the school of hard knocks.

Functionally, in our Air Force structure the technocrats, also known as systems analysts, have migrated to an analysis shop whose function it is to bring the services of the computer and the management-science techniques to the operational manager. The clustering of these technocrats has been brought about by their scarcity. The outside world provides salaries and opportunities that lure these young progressives from the Air Force ranks. The fallout of this situation is that we have both the technocrats and the traditional managers in our managerial environment—the usual ingredients for a generation gap.

I mentioned that the concept of a "generation gap" is not universally defined or understood. Within the environment of modern technology, it seems to be a communication gap. Behavioral scientists tell us that learning or perception operates as follows:

$$P = E + S$$

where P is perception, E is experiences of a lifetime, and S is the stimulus of the moment. Because the traditional manager and the technologist have entirely different lifetime experiences, the experience factor is different in the perception formula, and consequently the two do not perceive or view solutions in the same light. Hence, a generation or communication gap. A useful computer product is the result of a collaborative effort on the part of the manager and the technologist. When they do not perceive a situation in the same light, they cannot communicate with each other and utilize their respective talents to provide an optimal practical solution.

Eventually, these young technocrats will migrate up the organizational ladder, learn "traditional management" by experience, and fill the shoes of the managers they are serving today. When this happens, we will no longer have a communication gap because the manager of the future will be a crossbreed between the technologist and the traditional manager as we know him today. However, this will take at least a decade or more What do we do about our problem today?

The solution lies, for the interim period, in neutralizing the *E* (experiences of a lifetime) factor in our perception formula. If both manager and technologist have the same experiences from which to depart, perception will be, at least academically, the same for both; or, in practical terms, they will use the same techniques in making decisions.

Equalizing the *E* factor is no small chore. Perfect equalization is impossible. However, the wide range of the *E* factor provides a spread that can be reduced considerably. From the technologist's or systems analyst's point of view, he must realize that the manager is as much a professional as he is. The manager may not have a "professional language" such as computerese with all its buzz words and acronyms, and he doesn't have a bookcase full of technical journals describing his profession, but he does have modern management theories in his discipline, such as Management by Objectives, Participative Management, and Decision Theory. He studies behavioral science and is concerned with sensitivity training, motivation, job fulfillment, and job stretching. He has his apostles in the likes of Peter Drucker, Rensis Likert, Saul Gellerman, and George Odiorne. The technologist needs to bring his *E* factor closer to the manager's by self-education in management concepts.

The senior manager, unfortunately, has the hardest row to hoe. Before we suggest how he brings the *E* factor closer to that of the systems analyst, let's clarify one point. The traditional manager is not to be blamed for misunderstanding or not understanding the potential of modern management's technological tools. The computer was born during his generation. He was never formally schooled in the "new math," the management-science techniques, or the computer.

The affluent management world of today is deeply involved in change. This change was brought about by a population explosion, a knowledge explosion, social change, economic uncertainty, world political unrest, and technological progress. The manager surely has his hands full putting out the fires caused by the interactions of these changes. To ask him now to become a "technological expert" is perhaps asking a great deal. However, it is the manager who can cope with change that will survive to fill the plush seats of the future front office.

Many senior Air Force managers seem to believe that they can sneak out the back door of their careers before the computer catches up with them. This is shortsighted for two reasons. First, the manager who buries his head in the sand of the past will not see the adaptive, responsive manager pass him by as he progresses up the organizational ladder. And second, when the Air Force manager leaves the Air Force, he usually slips into the management environment of the outside world, which is even more involved with the computer and the management sciences. Unfortunately for him, the technological problem will not go away. It must be mastered.

Now, the big question. How do we get the manager's *E* factor to associate with the technological concepts that the technocrat espouses? No matter how you slice it, it requires training or education. The manager must understand how a computer operates and what it is capable of producing. This removes the mystique in which managers often like to enshroud the computer. It also has a spin-off effect. There is no better way to put a systems analyst—impressed with his trade and generous with its computer jargon—in his place than by throwing some computerese back at him. It makes the analyst aware that he is not impressing anybody and that he is talking to someone who is not going to buy everything lock, stock, and barrel just because it is associated with the glamorous computer.

Besides understanding the computer, the manager must understand the working logic of the management sciences. This does not mean that he must become a statistician, a linear programmer, an expert in mathematical

modeling and simulation, or an expert in program evaluation and review technique (PERT). It does mean that he must have a logical understanding and conversational knowledge of these techniques and be able to understand and use them.

How, then, does the manager educate himself in the computer and the management-science techniques? There are two avenues: (1) formal Air Force educational programs and (2) off-duty education, both formal and self-taught.

The Air Force has more than 1200 computers in its inventory, dedicated to serving all functional areas of management. Purchase and rental costs of hardware, plus the cost of software development (programs that run the computers), are rising at a tremendous rate. The Air Force budgeted in excess of $421 million in FY 1970 to support its computer operations. Some 27,000 Air Force personnel are directly involved with the computer. Yet training programs to teach managers how to utilize the potential of this expensive resource are very slim; the professional education program of the Air-Force—Squadron Officer School, Air Command and Staff College, and Air War College—provides only a token orientation in this area.

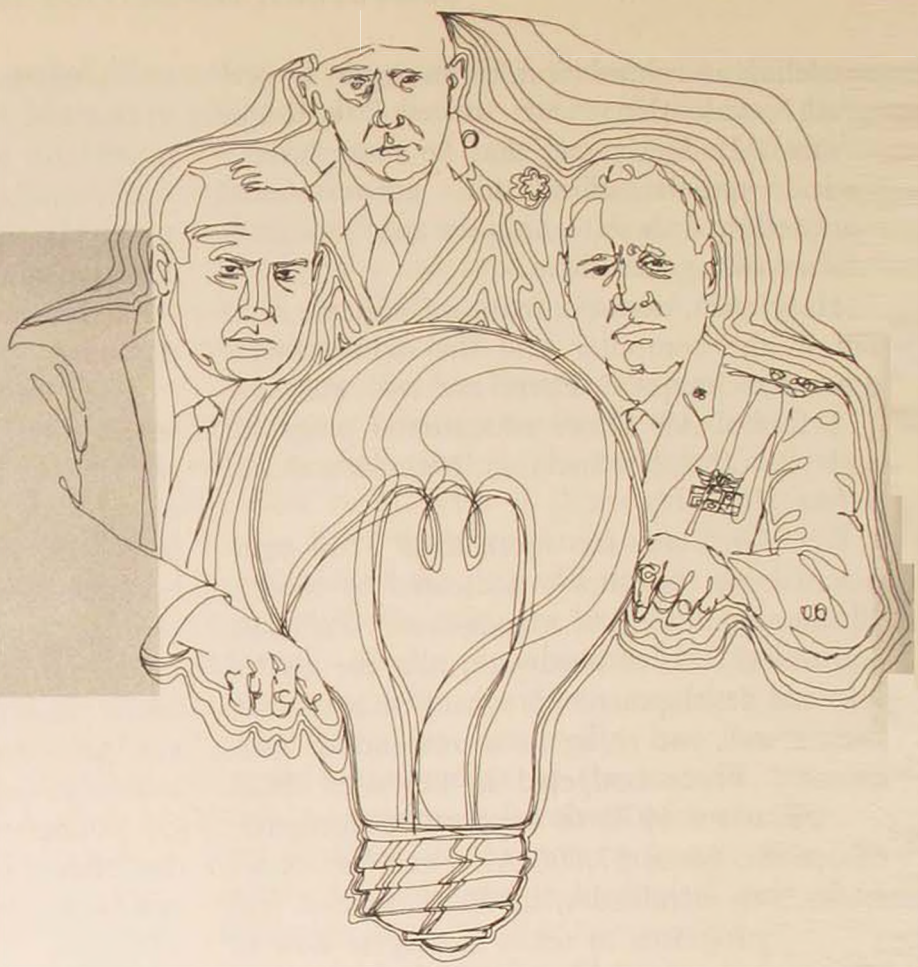
If one were to speculate as to what will have the greatest impact on management philosophy and operation in the next decade, it most likely would be the computer and the management-science techniques. The Air Force professional schools provide an initial but disproportionately brief coverage of this most important area. Computer electives are currently available in the Air War College and the Air Command and Staff College. Attendees should avail themselves of all opportunities in this area, to include writing theses on computer and management-science applications. Additionally, the Department of Defense Computer Institute provides excellent courses. Unfortunately, these formal schools are attended by a very small percentage of Air Force managers.

The "on-the-job" manager must therefore resort to self-education. This can be accomplished through off-duty formal college courses or through home reading. The computer has been with us long enough that some excellent books have been written on the computer and the management-science techniques that are management-oriented and written in layman's terms. Periodicals such as *Datamation, Business Automation, Fortune,* etc., have excellent articles to help bring management up to speed. Of course management must exercise self-discipline if it is to devote some of that precious and scarce leisure time to learning what it is all about.

Our affluent management environment is getting so complex that the days of decision-making by intuition or seat-of-the-pants induction are gone forever. The number of interacting variables associated with our problems is so great that one "management mind" can no longer comprehend all the relationships and intelligently predict the outcome of a decision. The computer as an extension of the manager's mind and the management-science techniques as mathematical optimizers and synthesizers of data are no longer luxuries. They are management's guarantee of survival.

Air University Institute for Professional Development

In My Opinion



DECISION-MAKING

MAJOR GENERAL GLENN A. KENT

I AM NOT so sure that analysis as a credible ingredient in decision-making will necessarily have a brilliant future. For a variety of reasons I believe the influence of analysis may be near its zenith and decline is in the offing. The watchword for the day is "Beware." Don't look now but your credibility is showing.

In mathematical language, while the first derivative for extrapolation into the future of the stature and credibility of operations research may now be positive, forces are at work that affect the higher derivatives. In time, if not corrected, these second and third derivatives will make the curve of influence turn downward. The purpose of this article is to describe these subtle but insidious forces and suggest corrective action.

First, decision-makers are becoming increasingly annoyed that different analysts get quite different answers to seemingly the same problem. Analyses are allegedly for the purpose of illumination. Still, at times, the light has a green tinge, or a deep blue tinge, or a light blue tinge, or a purple tinge. Sometimes the light comes out pure black. Seldom do analysts produce illumination with pure white brilliance. So the decision-maker becomes wary—as well he should—of this biased or shaded illumination. There must be something wrong when quantification of some particular problem produces such radically different results. In the blind rush to be worthy advocates, analysts enthusiastically engage in practices that border on perjury. The naïve exclaim that the answers appear to have been known ahead of time. The calloused inquire whether there is another way.

There is no easy fix. A common suggestion—in the interest of objective analysis—is to establish joint organizations for analysis or have analyses done by people who are "above service bias." This sounds good, but the theory is better than the practice: it is merely substituting one form of parochialism for another. To be more pointed, the illumination on problems by the

services will predictably reflect their own color. The illumination afforded by Joint Chiefs of Staff (JCS) studies has a way of coming out black because it goes through all of the filters. Those by the Office of the Secretary of Defense (OSD) come out purple, which may or may not be a better (or wiser) color than green, deep blue, or light blue. All too often the analyses are conducted in the context of a preconceived position. They become papers for "advocacy" as distinct from papers for "illumination." The quantification is shaped, twisted, and tortured to establish the "validity" of some particular point. But decision-makers want the facts.

Analyses by OSD and "think" organizations do not escape this plague. For one reason, their analyses are not so subject to critical review by nonbelievers as are analyses from the services. Whatever objectivity is achieved by the services does not necessarily stem from basic purity but rather from fear of rebuttal. One could get a single answer to a particular problem by never having more than one analyst work on the problem. But, while the problem of getting different answers has been resolved, there is still the nagging concern about parochialism. Such a measure may clear up the symptom but does not cure the disease.

Aside from bias and preconception, there is another reason analysts get different answers to seemingly the same problem. There is too little discipline about our analysis business. Not all of us handle interactions the same way. True, different analysts may use the same formula in describing the interaction of a bomb against a target, but once you get much beyond that simple stage there is little agreement.

If one is inclined to believe that great strides are being made in understanding the universal truths about interactions, let me note some of our basic deficiencies. In the tactical area, there is no consensus on the formulas or simulations that describe the interaction between such things as two aircraft in a dogfight, soldiers in a firefight, or aircraft attacking soldiers. Even in strategic matters—where we think we do very well on how to model the problem—the ICBM versus ABM interaction is still a confuser for many important situations. Different groups of people get different results because they do the calculations on different models (codes). But few are clear on the basic differences between the models. There is little attempt to determine which model or code is best suited to the real-life problem at hand.

As far as broader issues are concerned in the tactical area, only feeble progress has been made in our understanding of the logic having to do with how to allocate resources among ground troops, close air support, artillery, counterair, and interdiction. But such an understanding is central to an informed allocation of resources to achieve the best overall military posture. There is not even a consensus on the right measure of merit. More discipline should be introduced into the system.

In addition to being parochial and somewhat undisciplined at times, analysts are not even good illuminators. The mystique behind analysis has been torn away. Decision-makers are beginning to realize—as well they should—that if an analysis is done correctly and presented succinctly, it should be clear to nonanalysts. No longer can analysts hide behind some obscure explanation, nor can they, to close off all discussion, say to the decision-maker, "It's really quite complicated"—with the clear implication that only card-carrying analysts should understand.

The decision-maker knows that analysts have become quite adept at getting one bar higher than another. So he is quite cautious about making any decision without a better overall grasp. But he is having problems in getting that grasp, particularly when the analyst is not endowed with the basic understanding in the first place.

Even if the analyst and the decision-maker belong to the same parochial group and, accordingly, "know" and agree on the right answer, we are not home free. The decision-maker still faces the problem of selling the right answer to skeptics higher up. He feels the need of something more persuasive than that "one bar is higher than another." He needs the problem collapsed so that the bone structure is clean. He needs a "gut" argument; it is awkward to talk learnedly about linear regressions over an early breakfast with the Chief.

Too many analyses seem constructed in the

context that the purpose is to convince friendlies that the position they already hold is a good position. The cons to the position are carefully avoided lest we shake the abiding faith in our own righteousness: "Don't put in the cons or the Chief may not buy our position." "Don't bring up so-and-so; it will only open Pandora's box." But to be a persuasive advocate, the Chief needs to know all about the cons and the counters to these cons. Skeptics have a very nasty habit and a diabolical instinct to focus on the poorer aspects of any proposition, as distinct from the better aspects. One point in all this is that even in the business of advocacy it pays to be honest.

It is with some trepidation that I approach my next point: writing reports and giving briefings that do not leave the reader or the briefee in a state of complete frustration. But it does have a place in my overall theme. Packaging is important in other endeavors; the business of analysis is no exception. I am not going to dwell on the fixes; mainly they come under the heading of discipline—discipline in describing charts, labeling charts, as well as discipline in the vernacular. If the analyst invents new terms, all right; but he should announce that he is doing so and stick with it, not reinvent a new vernacular on each page and chart. There are no problems in this respect that murder sessions and good editing will not cure. Decision-makers are reluctant to admit that they do not understand some chart, particularly when everyone else in the room has assumed a knowing look. But if the analyst-briefer's charts display strange abbreviations designed primarily to cue him on what to talk about next, then the decision-maker may get tired reading them, since he gets no message. The worst fate of an analyst is not to be contested, but to be ignored.

Yet of all the analyst's sins, the one that will finally hurt his profession the worst is the blurring of "analysis" on the one hand and "position-taking" on the other. By failing to distinguish between the two, the analyst compromises a very useful tool. Analysts should be recruited because they have the talent to dissect problems—to collapse seemingly complicated problems to much simpler terms. They are to be graded on impeccable logic and correct arithmetic. They are to be graded on how elegantly and simply they were able to model some problem. One recruits such people from those who have been educated in economics, logic, and mathematics. One looks for people who have exhibited an uncommon ability to think and explain. Position-takers, on the other hand, are graded on how many times their position is accepted by the Big Chief. Position-takers are recruited from people who have a good background of experience and possess intangibles such as "mature judgment." Of course, the respective talents of these two different groups are not necessarily mutually exclusive. But, on the other hand, they are not necessarily coupled. Carried to the extreme, one could even suggest that the Pentagon stop the present-practice of recruiting analysts to practice position-taking.

It is probably permissible, although somewhat dangerous, for analysts to be allowed to take a position. But, I submit, these are two quite different functions and it is time we recognized they are different and acted accordingly. The position that is to be taken invariably hinges on far more factors than the analyst can include in his model. The analysis (the study itself) should not contain conclusions and recommendations. In the vernacular of "Completed Staff Work," the analysis is a subset of "Factors Bearing on the Problem." But the operating word is "subset" as distinct from the whole set.

If the analyst feels compelled to announce his position to the world, then he should do so in a covering letter, not within the confines of the document that is allegedly an analysis. All of this is intended to get analysts into a frame of mind that promotes at least a modicum of objectivity and relieves the reader of the unwanted burden of separating analysis from position-taking. If the analyst makes, as part of his analysis, the recommendation that we should buy A rather than B, then he is apt to go back through the analysis and turn every single input to the "buy A" position. He does this because he has been burned in the past by some reviewer who made the deathless charge

that "The conclusions and recommendations were not supported in the body of the analysis." If the unfortunate analyst had not fouled up in the first place by including a "position," he would not have been open to the charge at all.

Another aspect of this matter has to do with approving analyses. If the analyst insists on practicing position-taking and including an announcement of his position in the body of his report or briefing, then approval of his report hinges mainly on whether someone agrees with his position. Thus his report can be approved at one level, disapproved at the next, then reapproved at the next. People are apt to get mixed up on two separate questions: (1) Did he as an analyst do a good job in exposing the problem? (2) What course of action is going to be taken? If things are kept straight and separate, then the report will be distributed on the basis that it was a professional job; what is going to be done about the whole problem is quite a different question and sometimes very messy.

That these are separate questions is illustrated by the following recent case. The question (problem) had to do with how many FB-111s should be procured. The analysts from OSD and the Air Force were able to agree on an analysis; that is, they were able to agree on a measure of merit and agree that we were in the presence of the right question. Further, we agreed on how to do the calculations that showed how an agreed measure of merit varied as a function of the number of FB-111s procured. Actually we did not accomplish this professional agreement at first, but the decision-makers, after becoming frustrated in getting a feel for the problem, did come to an agreement on an analysis. Predictably, the analysis, when finished, showed that as we procured more FB-111s we did better, but to ever diminishing returns. Further, we were able to agree on how costs increased as a function of increased force levels. This is analysis (facts), and we could agree. But when it came to position-taking, there tended to be a slight divergence. The Air Force looked at that analysis and proclaimed: "All that increase in capability for such a small increase in budget." Personnel from OSD looked at the same analysis and exclaimed, "All that increase in budget for such a small increase in capability." Who is nearer the truth is indeterminate. It is strictly a matter of judgment—a judgment based on many more factors than were included in the analysis and a judgment to be made by decision-makers.

THE AIR FORCE should try to do more of this kind of analytical preparation for decision-making. We should have analyses conducted jointly by analysts who are inclined to different positions. The steps are straightforward: In the first place, agree on the relevant measures of merit; second, agree on the factors that affect these measures of merit; third, agree on the form of the equations that describe exactly how the measure of merit is affected by each factor (hopefully, eventually, perhaps, we can get this from the "Book of Standard Practice"); fourth, agree on the numerics—on what values to assign the inputs (the factors); and finally agree on how to present the results.

There should be agreement at least through the third step. This allows the calculations to be made. Agreement may not be reached on the values (the numerics) of all the inputs, but the results for different numerics can be shown. "If assumption X is used, this is the answer; alternatively, if assumption Y is used, this is the answer." In this way it is crystal clear why different results are achieved—different inputs were used. At present, all too often it is not known why different results are attained—one group used Code 99 and the other 007, and they talked right by each other.

There are surely shortcomings and pitfalls in doing analyses jointly and thinking about a "Book of Standard Practice." But we should at least keep analyses from being the principal confuser in the decision-making process. In the past, analysts were safe and serene in their sheltered life. Now the word is out that analysts can quantify almost anything, and they are suddenly in the limelight with an edict to produce or perish.

So beware. Watch that credibility.

Hq United States Air Force

HUMAN FACTORS ENGINEERING

A Potential Personnel Management Tool

MAJOR DONALD S. FUJII

THE Air Force is continually plagued with the loss of highly qualified officers and airmen. This is especially true in the career fields where private industry offers premium wages to lure our experienced personnel who possess skills that are in great demand.

In the officer area, "voluntary loss rates," which are computed as a function of officer resignations and requests for release from active duty prior to retirement, have been used to gauge the degree of general satisfaction/dissatisfaction with which young officers view a career in the Air Force. Over the past several years, the officer voluntary loss rates have been generally upward.[1]

In the airman area, "re-enlistment rates," which include only those separating airmen who are "eligible to re-enlist," are used as a general indicator of the effect of career motivation efforts. During the past several years, airman re-enlistment rates have been generally downward.[2] The following excerpt from a recent issue of *Air Force Times* indicates that the slump in re-enlistment rates is becoming a matter of major concern:

> Traditionally, AF has breathed easier once it has a first termer signed on for four more. In theory, the man committed for eight was not likely to toss away his retirement equity and could be counted on to go for the additional 12 when the time came.
>
> In the early 1960s, the theory held up. Retention at the eight-year point was about as well as that for more senior career men . . . consistently about 90 percent or better.
>
> By FY-1965, though, AF began to notice a drop in the second term rate. It slipped to 70 percent that year and continued to slip. By FY-1969, only 60 percent of the eight-year men eligible to re-up did so. About one out of three eight-year airmen were quitting after two hitches.
>
> Motivation officials report a small rally this year. For the first three quarters of FY-1970, the second term rate was hitting about 64 percent.
>
> But, the officials find little comfort in the modest improvement. Present surveys, they say, show that fewer than one half of all second term airmen have "positive career intent."[3]

Thus, present trends in officer voluntary loss rates and airman re-enlistment rates imply that our current group of young officers and airmen finds the idea of an Air Force career less appealing than their predecessors did. This presages turbulent personnel conditions for the 1970s and beyond.

One of the primary effects of the loss of highly qualified officers and airmen is the necessity of an increase in training. As experienced personnel leave the Air Force, we are forced to train replacements to fill their vacant positions. This training is big business. Although I do not have the actual training costs in the Air Force during the last fiscal year, it is known that training cost the services $7.2 billion in FY 1969. The cost for FY 1970 was predicted to hover around the $7.6 billion mark.[4] Therefore, the loss of our experienced personnel is an expensive Air Force problem.

Because of the high training costs that arise as a result of personnel losses, we have witnessed a steady stream of measures designed to counteract the exodus of our skilled and experienced personnel. Programs and studies, such as "New View,"[5] have been undertaken to counter the trends in officer voluntary loss rates and airman re-enlistment rates. In addition, the Air Force has resorted to such monetary lures as the variable re-enlistment bonus and pro pay to stem the outflow of personnel.

When one scrutinizes and analyzes the results of these measures, most of them may be classi-

fied as moderately successful. However, very few of the measures have a truly permanent or long-term effect upon the problem. In fact, in some cases the measures appear to be a "putting out fires" type of approach. This, I believe, is because the Air Force has directed its countermeasures at symptoms rather than at the basic cause of the problem.

Let me state that I do not disagree with the present programs and studies. Our personnel managers have done a commendable job in improving job satisfaction, morale, and the other facets within their area of responsibility. All I am proposing is a different approach to the problem. I feel we must probe for potential solutions in areas other than those that revolve around the motivational aspects of the individual. I suggest we search for solutions in the areas of engineering and systems management.

basic cause of the personnel problem

I am convinced that the *manner* in which the Air Force's operational hardware is designed is the basic cause of the majority of our personnel problems. More specifically, the traditional approach in hardware design fails to integrate applicable human-engineering considerations effectively. This oversight, in turn, results in weapon systems that possess voracious appetites for men and skills. The demand for large numbers of personnel and technical skills, the symptoms of our present design approach, gives rise to our personnel management problems.

As an example, let us analyze the typical approach used to design a portable aircraft test unit. Initially, a designer considers such engineering factors as weight, size, cable and wire routing, power requirements, reliability of parts, cost of parts, etc., and trades off their respective advantages and disadvantages to arrive at an optimal mix. Some designers even consider the skill level of the personnel who will eventually operate and maintain the unit; however, studies by Meister and Farr show that this type of designer is the exception rather than the rule.[6] After several reiterations, the process eventually culminates in a final design. Then, almost perhaps as an afterthought, man will be inserted into the picture to determine the tasks that the operators and maintainers will have to perform. Once identified, the personnel tasks will give rise to the personnel and training requirements, which then lead to the formulation of Air Force Specialty Codes, training courses, and procedural data such as operator manuals, maintenance manuals, and technical orders. These manpower, training, and logistical factors all contribute toward the operational cost of our weapon systems.

In summary, the traditional design approach does not effectively integrate human-engineering factors into the final design of our hardware. Thus, it deprives the Air Force of a powerful management tool that could enable its personnel managers to get at the heart of the present trends in personnel losses. If our weapon systems were effectively human-engineered, the demand for personnel and skills would be reduced. This reduction, in turn, would lessen our present problem of officer and airman losses and reduce the high cost of replacement training. In a nutshell, the Air Force can get at the basic cause of its personnel problems, especially personnel losses, by designing hardware that requires fewer personnel and skills. With such hardware systems, personnel losses would literally cease to be a matter of major concern for Air Force personnel managers.

personnel costs

As Air Force weapon systems become increasingly complex and sophisticated, their appetites for specialized and highly skilled personnel will increase exponentially. Thus, it behooves high-level Air Force management to look for new management techniques that will control or reverse this trend.

The costs associated with system personnel are often overlooked or viewed within the limited framework of the initial procurement costs. However, when one considers the impact of personnel on costs during the total life cycle of a weapon system, the costs do become shocking. It has been estimated that the costs associated with operation, maintenance, and training may constitute from 50 to 75 percent of a system's total life cycle costs. As our systems

are kept in the operational inventory beyond their originally intended lives, such factors as personnel losses, the need for replacement training, the updating of procedural data to accompany improved hardware, increasing overhead costs, etc., play a proportionately greater role in determining the total cost of our systems. When one looks beyond the total life cycle of a system, the costs associated with such temporally distant factors as retirement pay, Veterans Administration benefits, etc., also have an impact on the overall Air Force budget.

Man is required for every weapon system, manned or unmanned. It takes trained and skilled personnel to transform our billion-dollar engineering marvels into dynamic, functional systems that are under the control of man and serve the objectives of our nation. In short, man is money—billions of dollars' worth each year.

proposed solution

I am convinced that the Air Force can gain an effective means of dealing with its personnel problems, especially personnel losses, if it effectively integrates human-engineering design criteria into the traditional design process. The realization of this proposal will not be a simple matter. It will require open-minded, high-level managers who have the intestinal fortitude to break away from the traditional manner in which personnel problems have been approached. It will necessitate the development of policies, procedures, and techniques to provide a trained force of human engineers with a charter and the tools to enable them to influence hardware design effectively and meaningfully. As a precautionary note, let me add that this proposal is not an indorsement for the unlimited application of human-engineering design criteria. Such a philosophy would be just as detrimental as the present one, which places primary emphasis on hardware considerations. What I propose is the moderate, logical, and cost-effective application of human-engineering design criteria. The benefits to be gained from this proposal will not be delivered on a cost-free platter. However, once the inherent potential to be gained from the proposal is recognized, the Air Force may risk investing.

potential benefits

The modification of a station operator's console will be used to illustrate the potential benefits that may be realized as a result of effective human engineering of hardware.

Prior to the modification program, the Air Force Satellite Control Facility (AFSCF) used station operator's consoles, designated SOC-I, that required three operators per console.

During the modification program, human-engineering personnel from the contractor and the AFSCF were permitted to play a major role in the design and development of a second-generation station operator's console designated SOC-II. During the design process, human-engineering design criteria and principles in such documents as Military Standard 803A-1 (superseded by MIL-STD-1472) and the AFSCF Human Engineering Design Standards were applied to the hardware design. Extensive use was made of functional grouping principles and software-controlled, human-engineered visual displays. The cost and availability of commercial off-the-shelf parts were part of the human-engineering considerations. The final human-engineered design resulted in a console that required only two operators instead of the three required by SOC-I. Essentially, the SOC-I and SOC-II consoles performed similar functions.

The elimination of one operator per console, resulting from the design of SOC-II, will yield future savings of $446,112 per year throughout the remote tracking station network of the AFSCF. It is estimated that during the projected 10-year life of SOC-II the Air Force could realize savings of approximately $4 million.

Although this example is based on a modification program, the potential of effective human engineering is aptly demonstrated. Should effective human-engineering criteria be applied during the formative stages of the design process, the potential to be realized will most likely be much greater, especially from the cost-effectiveness point of view.

the investment

The solution I advocate is based upon three and a half years of experience as a human-performance engineer (the Air Force term for

a human engineer) in the systems management environment, yet it is still intuitive. Therefore, high-level Air Force management must invest in the gathering of scientifically validated data and credible personnel costs before specific procedures and techniques can be implemented.

The manner in which this research is accomplished will be crucial to the success or failure of the proposal. Thus, the following suggestions are almost mandatory:

(1) The organization that is established to perform the research must be strongly oriented toward applied research. It has to be able to bridge the gap between basic research and the real world. The specific research tasks must be developed on a joint, cooperative basis with the eventual users of the data, primarily personnel of the system program office in Air Force Systems Command. This will ensure that the data produced will be packaged so as to be understandable and usable by the engineers and designers who work on our weapon systems.

(2) The organization should be placed under the direction of researchers who are responsible for personnel management, not hardware engineering. The engineers do not have a direct stake in the problem of personnel losses. Their expertise lies in the building of hardware, so it would be naïve to assume that they would be motivated to direct the research in question. The present ineffectiveness of the personnel subsystem (Air Force Regulation 80-46) supports this belief. On the other hand, our personnel managers, who are accountable for the resolution of personnel problems, would be committed and motivated to support the proposed research with vigor and enthusiasm. After all, they would become one of the beneficiaries of the results arising from the new human-engineering procedures and techniques.

(3) The personnel who comprise the research staff must possess an academic background and practical experience in at least one of the following disciplines or fields: human engineering, personnel subsystem management, system analysis, econometrics, manpower management, system engineering, personnel management, and cost analysis. A blend of backgrounds is necessary because of the very nature of man's role in our weapon systems: man-associated considerations permeate all hardware subsystems and functions. In short, the team approach is a basic necessity.

Once workable and cost-effective procedures and techniques are developed, the next step will be the formulation of policies to implement the proposed concept.

I believe the proposal contains sufficient merit to warrant further investigation. To me, it is an attractive investment for the Air Force to make. But it will never move from the idea stage until high-level Air Force managers have the guts to take a new approach to an old problem.

United States Air Force Academy

Notes

1. Based on information provided by the Air Staff.
2. *Ibid.*
3. "Re-Up Slump of Concern," *Air Force Times*, 24 June 1970.
4. "Personnel Price Tag on the Rise," *Armed Forces Management*, XV, 7 (April 1969), 75–77.
5. Clifford E. Smith, "Implications of 'New View' for Motivating Officer Behavior," *Air University Review*, XX, 3 (March–April 1969), 57–62.
6. David Meister and Donald E. Farr, "The Utilization of Human Factors Information by Designers," AD 642057, 16 September 1966.

Books and Ideas

HANSON W. BALDWIN

A LIGHT ON NATIONAL STRATEGY

LIEUTENANT GENERAL IRA C. EAKER, USAF (Ret)

ALTHOUGH I had been reading Hanson Baldwin's articles on military subjects since 1929, when he became military correspondent of the *New York Times,* I did not meet him until 1937.

General H. H. Arnold, then Assistant Chief of the Army Air Corps, said to me, "I wish we could find someone to do the job on military aviation that Hanson Baldwin of the *New York Times* does for the Navy. Perhaps the next best thing is to try to acquaint him with our mission, problems, and plans—hopes and fears. You get in touch with him and see if you can fly him to the Carolina Air Maneuvers, and perhaps he can do some pieces for us about what air forces can do."

Baldwin did spend a week with us at the maneuvers and flew with us on missions, but I don't believe "Hap" Arnold ever thought we had succeeded in making an air convert of Hanson, since I heard him say more than once with the passing years, "What we need is a Hanson Baldwin to tell the air story like he sells the Navy."

While Baldwin has written fifteen earlier books on military subjects, including *Strategy for Victory, The Navy at War, Great Mistakes of the War,* and *The Great Arms Race,* his latest book, *Strategy for Tomorrow,*† is not only the best but so urgently timely—a sane approach to our number one priority, the nation's security in these dangerous times.

That the author is clearly influenced by the strategic doctrine of the great writer about naval influence on strategy, Alfred Thayer Mahan, is not surprising, since he is a graduate of the U.S. Naval Academy (1924). As a Mahan disciple, he really brings the master's strategic philosophies up to date, adapts Mahan to the nuclear age.

In his first chapter ("Man and Power") of this present work, Baldwin examines the prospect of a peaceful world after Vietnam and finds "war is a human institution which is certain to remain a global phenomenon since power in all its forms . . . is and will remain a dominant factor in the affairs of nations and men." He completely invalidates the dreams of

† Hanson Baldwin, *Strategy for Tomorrow* (New York: Harper & Row, 1970, $12.50), 377 pp. with appendices and map.

the pacifists that a peaceful world will come if the United States will only disarm as an example to the world. Baldwin agrees with earlier historians when he says, "Unless one learns from history, one is condemned to repeat it."

Then, in his chapter "Recent History," he pays his respects to McNamara and his Whiz Kids: "During the tenure of Defense Secretary Robert S. McNamara in the Pentagon, military expertise and military experience were downgraded," and he proceeds to catalogue some of the unfortunate results that followed.

Baldwin gives an interesting review of the Vietnam War and concludes: "Our conspicuous failures in Vietnam were failures in command and control at the top levels in Washington, a product not only of personalities but also of the closely centralized organization that has evolved in the Pentagon. . . ."

In succeeding chapters—"The World of Tomorrow," "This We Must Defend," "The Defense of Europe," "The Middle East," "East of Suez," and "Asia and the Broad Pacific"—the author gives the best review I have seen of the current status in the world's strategic subdivisions and potential trouble spots.

He comes to the main purpose and climax of the book in the chapter entitled, "The Strategy for Tomorrow."

Having outlined the nature of man and the certainty of future wars and examined the shape of things worldwide, Baldwin tells us what we need to do to live safely in the current dangerous world climate.

He calls his proposed defense plan "An Oceanic Strategic Concept." The oceans he visualizes are not only the sea approaches but the air and space around and above "our island home, the area we must defend."

He expounds six basic requirements to support the "Oceanic Strategy":

- Superiority in strategic weapons.
- Maritime superiority.
- Unrivaled research and development across the board to prevent technological surprise.
- A superior intelligence system.
- The shortest possible lead time for all weapon systems. (Russia is considerably ahead in this vital area now, Baldwin warns.)
- A recognition of the pre-eminence of man as the king of battles, "for upon his will and skill hangs the future of American security."

Baldwin's estimate of the military manpower requirement for the Oceanic Strategy ranges from 1.5 to 2.5 million, depending upon disarmament discussions and world conditions.

His defense budget evaluation is equally elastic. The present and projected annual defense outlays, less than 8 percent of our gross national product (GNP), are clearly too low. He says that we could afford to spend at least 10 percent of the GNP and that by 1975 this would mean defense budgets of at least $100 billion.

While Baldwin no doubt would increase undersea long-range missile systems (ULMS), he does not advocate putting all our defense eggs in the ULMS basket. He makes a strong case for maintaining the Triad: bombers, ICBM's, and ULMS.

BALDWIN'S *Strategy for Tomorrow* is the best evaluation I have seen of the relative security of our country in today's troubled world and what needs to be done to assure our future survival. It deserves to be studied carefully by every defense decision-maker in the Pentagon, in Congress, and in the White House, as well as every other military thinker.

Perhaps one reason for my high regard for this book is that it presents defense philosophies, plans, and programs that I have long held. I finished every chapter with the thought, "I wish I had said that."

But no one except Hanson Baldwin could have written *Strategy for Tomorrow* in such admirable fashion. Many current students of defense requirements may differ with him about details of the security problem and programs, such as numbers and types of weapons and the assignment of roles and missions to the armed services. And many of my acquaintance have knowledge and wisdom in the defense area equivalent to his. Without his literary experience and talent, though, none of them is likely to state the case with the clarity and style and excellence that Baldwin has achieved in this book.

My own estimate is that if our national leaders follow his prescription for our security in these times, we shall have a credible deterrent to nuclear war. After all, that is the key to survival for ourselves and the Free World.

Washington, D.C.

SOVIET FOREIGN POLICY AND MILITARY MIGHT

Two Sides of the Same Coin

Dr. Kenneth R. Whiting

A MULTITUDE of experts and nonexperts have produced works dealing with Soviet foreign policy and a lesser number have tried to describe the military power underlying the Kremlin policies, but few analysts have combined the two. Thomas W. Wolfe, in a recently published book, has made just such an attempt.† Although he makes a valiant effort to interweave the foreign- and military-policy threads into a tightly woven whole, the final product emerges as two studies: one of them is concerned with the Kremlin's objectives outside Russia, especially in Western Europe, and the other is a description and analysis of Soviet military policies over the last quarter of a century. Wolfe's technique is first to describe the foreign policy of an era, say Khrushchev's, next to analyze the military side of the picture, and finally to show the interaction of the two policies. On the whole he is successful since he keeps the reader aware that the effectiveness of Soviet foreign policy is to a large extent dependent on its underlying military force.

In this book Dr. Wolfe handles time somewhat as a landscape painter treats space; the farther events are from the present, the less space they are allotted. Thus the description of the Stalinist period (1945–53) takes up only ten percent of the book, the Khrushchevian era (1954–64) gets thirty percent, while the Brezhnev-Kosygin regime (up to mid-1969) accounts for sixty percent of the work. Since the reader will probably be more interested in recent events than in earlier happenings, the book would seem ideally proportioned.

In his analysis of Soviet postwar policies, especially as they concerned Europe, both East and West, Wolfe devotes considerable space to Stalin's military problems. These can be roughly reduced to two primary objectives: to break the American nuclear monopoly and to hold Western Europe hostage while accomplishing the first task. Stalin was eminently successful in both.

His successor, Khrushchev, inherited the perplexing dilemma of how to translate Soviet military power, now including nuclear armaments, into effective political power. The paradox was, and still is, that the newly developed weapon systems tend to multiply risks and thus narrow the opportunities for turning military might into political advantage, especially in such a sensitive area as Western Europe. The result was Khrushchev's "revision" of the time-honored Marxist-Leninist-Stalinist dogma that armed conflict between the two systems (Communism and Imperialism) was inevitable. Khrushchev advanced the new doctrine that war between the two major nuclear powers was no longer inevitable. This so-called "peaceful coexistence" line, however, offended the Chinese Communists and also violated the Clausewitz dictum accepted by Lenin that war was a continuation of politics.

† **Thomas W. Wolfe, *Soviet Power and Europe, 1945-1970* (Baltimore and London: The Johns Hopkins Press, 1970, $3.95), 534 pp.**

As Wolfe points out, the main problems Khrushchev faced were as follows: First, whether to settle for an inferior posture in strategic weapons or to go for a war-winning capability by trying to outbuild the United States; second, what to do about the balance or lack of balance in conventional and strategic forces in the Soviet Union itself; and, finally, what policy to follow in regard to the Warsaw Pact. Economic resource limitations, the recalcitrance of the more traditionally minded Soviet military leaders, and Khrushchev's desire to gain easy diplomatic victories all combined to make the Khrushchevian era rather erratic. He went from a condemnation of Malenkov's "war-will-end-civilization" view in 1954 to the acceptance of that same view later; but it did not stop him from indulging in brinkmanship in the Berlin crises or from making his ill-fated Cuban missile gambit. He alienated many of his military leaders by trying to reduce military expenditures at the expense of the conventional forces.

The main body of Wolfe's opus is concerned with the adventures of the "collective leadership" between the ouster of Khrushchev in October 1964 and mid-1969. While the coverage of this period is far more detailed than that of the twenty-year span preceding it, the approach is the same: an interweaving of political and military factors in the formation of Soviet policies in Eastern and Western Europe. In this section, however, the Sino-Soviet split, the escalation of the war in Vietnam, and events in the Middle East have to be dealt with at some length, since they complicated the Soviet attitude toward Europe.

THE Brezhnev-Kosygin leadership inherited a number of problems when it took over in October 1964. Relations with Peking were extremely bad; there was a good deal of ferment in the European satellites, especially in Romania; Soviet involvement in the Middle East had been getting deeper and deeper after 1955; and the German problem was still a worrisome thing for the Kremlin. On the other hand, NATO seemed to be disintegrating nicely, and the Soviets had some hopes that it might founder by its twentieth birthday in 1969. A détente with the United States had followed the signing of the limited test-ban treaty in July 1963, and the war in Vietnam was just big enough to keep American attention away from Europe. On the whole, the new leadership had every reason to be optimistic. A slackening of tensions with Peking and a weakening of NATO, both thought of as possible, should enable the new leaders to gain influence in Western Europe.

Then things began to go awry. Mao Tse-tung got even nastier than in the Khrushchev period, and Sino-Soviet tensions increased. The escalation of the war in Vietnam meant a deeper Soviet involvement. Romania grew even more independent, and by early 1968 Czechoslovakia was beginning its attempt at "humanizing" Communism under the guidance of Dubcek. Soviet influence in the Middle East became even greater after the war in July 1967, but the danger of a Soviet-American confrontation in the area also increased. In addition, the Soviet people were growing restless, a desire for change seemed to be in the wind, and the influence of developments in Czechoslovakia was frightening the Kremlin leaders.

August 1968 was a watershed in the period under discussion. Probably aware that an armed invasion of Czechoslovakia would stop the erosion of NATO unity, the Soviet leaders nevertheless went ahead with it. Militarily it was a success, but politically it was messy—so messy that the "Brezhnev Doctrine" had to be invented to justify it. Wolfe lists the benefits accruing to Moscow in the short run: the invasion reestablished the credibility of Soviet military power in East Europe; it prevented the spread of Czech reformist ideas to the other satellites and to the Soviet Union itself; it increased the Soviet military presence deployed in the Northern Tier of the Warsaw Pact area; and it stopped Bonn's *Ostpolitik* of building bridges to the satellites. On the liability side of the ledger, however, the invasion shattered the image of a mellowing Soviet Union that had been helping to erode the unity of NATO; it split the world Communist movement even further; and it also prompted the United States to pay more attention to its European allies and to put off strategic arms talks with Moscow, at least for the time being.

Having dealt with the varying fortunes of the Brezhnev-Kosygin foreign policy, Wolfe then turns to a description and an analysis of Soviet military policy in the 1965–69 period. He sees Soviet military policy as a reflection of foreign policy. Stalin's continental policy was buttressed by his continental military power, but Khrushchev's global foreign policy lacked the necessary military underpinnings to be completely effective. His successors, however, have been developing the military power that Khrushchev lacked. But in all three leadership periods, a strong military posture toward Europe has been maintained.

The Brezhnev-Kosygin regime has devoted increasing amounts of economic resources to the improvement of the Soviet offensive-defensive capabilities on the strategic level while at the same time developing more mobile and versatile conventional forces. The military budget has been increased every year since 1965. As a result, the Soviet strategic posture has been remarkably improved, reaching parity with the United States in ICBM's by mid-1969, as well as the beginnings of an ABM program. Wolfe states that although there may be differences of opinion among the Soviet military leaders as to the capabilities of the ABM system, none question publicly the desirability of building such a system.

The main innovation under the Brezhnev-Kosygin leadership, however, has been what Wolfe calls the "efforts to improve the mobility and 'reach' of Soviet conventional forces." The naval buildup, the increase in airlift capability, the development of special forces, and the search for bases abroad are all parts of the overall program to improve the "reach" of Soviet conventional forces. He sees this as the military reflection of the Kremlin's global foreign policy, the Soviet determination to play a major role in the Third World. The increasing naval presence in the Mediterranean and the goodwill visits in the Indian Ocean and the Persian Gulf are intended to support Soviet diplomacy in the Middle East and South Asia. Even the traditional Soviet disdain for aircraft carriers has been partially breached by the construction of helicopter carriers of the *Moskva* type, which in addition to ASW work can be used for landing operations. The Soviet airlift capability was vividly demonstrated during the seizure of Prague in August 1968, although that operation was not under true combat conditions.

Soviet military doctrine has shown more flexibility in the last few years. It no longer excludes the possibility of nonnuclear warfare or of warfare using tactical nuclear weapons within the framework of so-called "local wars," to use the Soviet jargon. Some Soviet military theorists even state that the armed forces should be prepared to conduct both all-out war and limited war with or without the use of nuclear weapons. The September 1967 "Dnepr" maneuvers in the Soviet Union were primarily a test of Soviet conventional warfare capabilities. Vis-à-vis Western Europe, however, most Soviet military writers still follow the traditional scenarios involving the use of nuclear weapons by both sides. Wolfe thinks that the low level of the NATO conventional forces leads the Soviet theorists to believe that NATO would be compelled to resort to nuclear weapons rather early in the event of war in Europe.

WOLFE goes into considerable detail in his discussion of the "Soviet military posture toward Europe." Although the succeeding Soviet regimes have been faced with problems ranging throughout the world from China to Vietnam to the Middle East, they have always retained a strong posture toward Europe. Large conventional forces have been maintained in the Northern Tier of the Warsaw Pact area as well as in those parts of European Russia nearest the satellite borders. Wolfe lists a number of reasons why it might pay the Soviets to reduce these forces in Eastern Europe—the damnable expense, the erosion of NATO unity by reducing the obvious threat, and the use of the troops thus saved as border forces along the border with China. Obviously these arguments are outweighed by the "simple inertia of two-and-a-half decades" of traditional military thinking, the German problem, and the belief that NATO will erode away eventually with or without the presence of Soviet forces in the Northern Tier. But above all, the large conventional forces in that area must remain there to insure satellite compliance with Kremlin directives; the events of 1956 in Hungary and in Czecho-

slovakia in 1968 demonstrated this necessity, at least in Soviet opinion.

The restoration in 1967 of a separate command for the Soviet ground forces, which had been abolished in 1964, evidences a boost in the prestige of that branch of the services, a prestige that had suffered badly under Khrushchev's rule. General of the Army I. G. Pavlovsky, the commander in chief of the ground forces, is a deputy defense minister and was made the commander of the invasion forces into Czechoslovakia in August 1968. Unrest in Eastern Europe, the Soviet scenario for any future war in Europe, and a 6850-mile common border with a hostile China should insure the prosperity of the ground forces for some time to come.

Wolfe sees little evidence of incipient changes in the Soviet control of the Warsaw Pact forces, unless it is to be more emphasis on the role of the Northern Tier with Soviet forces filling in the gap left by the unreliability of the Czechs. Romania's agitation for rotation of command and for consultation with Pact members concerning the use of nuclear weapons seemed futile before August 1968 and more so since.

In his final chapter Wolfe discusses a number of questions relating to the changing military balance between the Soviet Union and the United States and its effects upon both the European and the wider, global aspects of the relationship between the two superpowers. After discussing many of the possibilities that may ensue if the Soviets attain either parity or superiority in the military balance, he finds it prudent to assume that the Soviet leadership "may accept greater risks in the process of trying to extract political gains from a changed strategic equation, thus introducing new elements of turbulence into international relations." In the case of Europe, which constitutes in Soviet eyes the main arena of world politics, Wolfe asks whether the strain on deterrence might increase considerably given the preponderant Soviet conventional strength no longer checkmated by superior American strategic power. It is the possibility of such a situation that leads Wolfe to question the advisability of a strategic arms limitation agreement.

Even outside Europe, where United States and Soviet military power overlap, the changing of the military power equation might tempt the Kremlin to press for political gains and thus lead to a Great Power confrontation. Although the Soviet leadership has continually asserted its determination to avoid a confrontation with the United States, under the above circumstances it might blunder into actions which could lead to just such a dangerous situation. To quote Wolfe:

> The impression of an incumbent regime prone to act unpredictably under the pressure of the Czechoslovak crisis does nothing to increase confidence in the collective judgment of Soviet leaders.

Wolfe ends his book with a discussion of future Soviet conduct, which will in the final analysis be determined by the direction in which the Soviet system itself moves. He sees two main possibilities: either a Soviet Union basically evolving toward a more responsible role in international politics and adjusting to reform and liberalization within the nation; or the alternative possibility of a Soviet Union "backing into the future on the basis of old politics and habits more likely to promote global ferment and discord than world stability."

MINOR carping and nit-picking aside, this is an excellent book. It is well written and is a tribute to the author's incisive thought and encyclopedic knowledge of things Soviet. Wolfe's analysis of the Stalinist period will not endear him to the revisionist school, which sees the Cold War as foisted upon a gentle Stalin by the U.S. "imperialists." Neither is his book likely to become a source of quotes for "doves," who are inclined to advocate a unilateral American cutback in military capabilities. It is a work that posits a continuing Soviet determination to play a larger role in the world arena, a role dependent upon an ever stronger Soviet military posture. The scholarly apparatus is a bit awe-inspiring (some 1843 footnotes, many of them virtual bibliographies on specific topics), and the publisher should be congratulated for putting the footnotes where they belong—at the foot of the page. For once, that favorite old chestnut of reviewers, so often misleading, that "this book deserves a place in the library of the reader," is truly applicable—*this book does deserve such a place!*

Maxwell AFB, Alabama

FORMLESSNESS AND FRUSTRATION

COLONEL F. D. HENDERSON

IT'S LATE in the last quarter of the Army-Navy game. At this point I'm watching the television screen out of sheer loyalty. It has not been a satisfying afternoon.

My roommate laughs. She's cuddled up in her chair with Charlie Flood's newest book, *War of the Innocents*. She has a lot of different laughs. After 26 years of listening, I can interpret the tone of this chuckle and guess just where she is in Charlie's book.

Sure enough—page 133—on the girls of the Far East: "Their bodies are lovely: Their skin is warm gold satin. They are agile . . . Asian young women make their American counterparts look as if they have arthritis."

But be not misled. There is little in *War of the Innocents* on the more pleasant aspects of the Far East. Charlie Flood uses his remarkable ability to write simply but descriptively to give the reader the best feel yet for the war in Vietnam.

Charlie had a really great year in Vietnam. A novelist and newsman, he was adopted by the 31st Tactical Fighter Wing. He flew with the wing from Florida across the Pacific to Tuy Hoa Air Base in the fall of 1966. Tuy Hoa was his home base for a year. During this time he flew many combat missions in the back seat of the F-100F. He flew forward air control missions in the back seat of an O-2. He went on civic action patrols and helped to dispense pills. He went on armed helicopter missions and crash-landed once. He braved all the perils of Saigon and emerged unscathed. He patrolled with the ARVN. He traveled and lived and even "fought fiercely" with the Dragoons of the Fourth Infantry Division. And more.

This book, *War of the Innocents*,† is Charlie Flood's account of his year in Vietnam. It is beautifully written. Sometimes funny, sometimes sad. It is exciting. It keeps moving. Cliché: He tells it like it is.

Therefore, this book is for

—all men who have flown with the 31st Tac Ftr Wing,

—all men who have served with the 31st Tac Ftr Wing,

—all men of the Seventh Air Force,

—all men of all services in Vietnam,

—their fathers, mothers, sisters, brothers,

—their women, sons, daughters,

—and people who are fond of simple, declarative sentences.

But this book is not for

—hawks who want reassurance that we are winning or can win in Vietnam,

—doves who want reassurance that the game is not worth the candle or that we are losing in Vietnam.

Charlie doesn't editorialize—not directly, anyway. The people he meets speak their own pieces in his book. Through their eyes, you, the reader, see the war as they see it—one piece at a time.

That's the only way to understand the war in Vietnam—one piece at a time. As an example, Charlie was talking to Tom Lynch, Dragoon Commander, at a muddy fire base in the Central Highlands. Here is Charlie's account of the conversation:

> "How's your work going?" Tom asked me.
>
> I told Tom that as I looked at all my notes, as I added up my own experience in the past seven months, I was struck with the difficulty of what I had undertaken. Had I joined this very division in England on the eve of D-Day in World War II, I would have, assuming I survived, been able to recount a story of movement—across the Channel in the invasion, into Normandy, the liberation of Paris, the Rhine crossing, the

† Charles Bracelen Flood, *The War of the Innocents* (New York: McGraw-Hill Book Company, 1970, $7.85), 480 pp.

> fighting across Germany, and, eventually, victory. Here it was first one muddy hilltop and then another, one F-100 mission and another and another, all from the same base. Saigon did not move. I simply shuttled back and forth between largely repetitive situations.
>
> "That's what your book *should* be about," Tom said sharply. "Nobody understands that. This *is* a formless situation. That's what your book should be about—the formlessness and frustration."
>
> "All right," I said, "but how do you write a beautifully constructed book about a completely formless situation?"

Charlie Flood succeeded.

I was particularly delighted by this book because Tuy Hoa was also my home for a year. And I knew Charlie Flood—not well enough, though.

I wish I'd been perceptive enough to appreciate Charlie when I met him. I arrived in Tuy Hoa in November of 1967. I remember meeting him—plaster cast and all. While he had been on an evening stroll with some American advisers and Vietnamese troops, the locally assigned Korean artillerymen, with their customary abandon, had fired some investigative rounds at them. In a wild dive to safety, Charlie had broken his wrist.

The other thing I remember about Charlie was the typically lumpy look that seems to characterize the civilian wearing a fatigue uniform.

And to his eyes, I'm sure I was equally unimpressive. As he says in his book, after nearly a year there one develops the veteran's disdain for the unproven newcomer. Even though I was enough of a wheel to rate a room in the Taj Mahal, that super hooch which Charlie describes so well, to him I was just another greenhorn. So I looked in vain to find myself in his book.

But I found friends in it, and his descriptions of them made them come alive exactly as I remember them. From this I would guess that equally accurate were the vivid descriptions of other people which made me feel that I actually knew them.

Take Colonel Warren Lewis. He succeeded Colonel Jim Jabara as commander of the 31st Tactical Fighter Wing when Jim was killed in an automobile accident as the wing was preparing to move overseas and go to war. Who could take Jabara's place? What more respected and experienced fighter pilot than Jim existed? Who could get the 31st Wing moving again after this numbing loss? Warren Lewis, that's who. He was not a large man but possessed the generosity of spirit often associated with the very large and strong. He had that aura of leadership that comes naturally to a fortunate few. Compared to Jabara, he was unknown, but a more aggressive fighter pilot I've never known. He brought the wing to a new and almost bare base in Vietnam and led it immediately into combat. He usually flew eight or nine missions a week, ending his tour with more missions than he had days overseas. Yet he found time to exert the tightest possible control over all aspects of the operation of a wing. Professionalism was his motto, and that spirit permeated every corner of the base. Charlie Flood's portrayal of Warren Lewis is a pleasure to read.

Take Pres Flanagan. I came to know Pres fairly well. I knew that Pres's love affair with the same goon—our ancient C-47—had begun in World War II, before many of the fighter pilots in the 31st had been born. I knew that Pres, for all his bulk and deceptively out-of-condition appearance, was a scratch golfer. I knew that Jackie Cochran was a great friend of Pres and his wife. I knew that Pres had a lovely home and a big cruiser on the Florida coast.

I guess I automatically supposed Pres came from a wealthy family. That's usually true in those few cases of affluence among the military. Also, Pres had the gentleness and thoughtfulness one automatically associates with good breeding, not the irritating aggressiveness often found in those who single-handedly claw their way up from the bottom.

I had to read *War of the Innocents* to find out that Pres Flanagan was, contrary to my guess, one of the latter, a self-made man who started with absolutely nothing. Being inherently modest, he'd never mentioned that part of his past to me. But good reporter Flood was able to get the whole story. And what a story it is!

My roommate was particularly delighted with

Charlie's descriptions of flying in an F-100. I've been so close to airplanes for so long that I've lost the ability to chat about flying in a way that would catch her imagination. What's routine for me, such as an afterburner exploding into action, would be exciting to my wife. What would be exciting to me, such as the downward flicker of an oil-pressure indicator, would be meaningless to her. So it was through Charlie's well-recorded reactions to jet fighter flight that my blonde friend really began to understand what it's all about. She got a further amusing clue from Charlie's comment (after many jet flights) on his first flight in an O-2, "First take-off I've enjoyed."

Although I was especially interested in those parts of *War of the Innocents* dealing with the Air Force operation at Tuy Hoa, less than half of the book deals with those matters. After all, from the cockpit of an F-100 one can get only the vaguest feel for what's going on down there below the rippled green of the jungle canopy. You have to get hit or see another aircraft hit once in a while to remain convinced that there really is activity—lots of it unfriendly—down there in that hidden world.

Charlie discovered plenty of action beneath the jungle tops. Through the eyes of a civilian friend, he recounts one incident during a small fire fight:

> He [John] told me of a young black soldier who should have been looking for a medic, once they linked up with B Company and the enemy fire was lessening. The man's bleeding left arm was hanging useless at his side, and he had no helmet. He still had his M-16 in his right hand, and as the Americans formed up to drive into the brushes after the North Vietnamese he walked over to John.
>
> "Gimme your helmet," he said. "We're going to assault."
>
> "*You*'re going to assault?" John asked, staring at the man's shattered arm.
>
> "We're going to assault, man," the black soldier said.
>
> I stared at John in the quiet, cool bar.
>
> "What did you do?"
>
> John shook his head, still seeing the boy right in front of him. "I gave him my helmet, and he assaulted."

That's one of Charlie's few second-hand stories. He saw a lot of action, probably more than he wanted. He was with B Company of the Dragoons during a fierce fire fight, and his account of this action makes me real happy to be a fighter pilot. Those grunts have it rough. During the height of this action he became aware of a few wounded men who needed help to reach safety. Charlie's description of his fear fighting his courage rings a familiar bell. Some men rise to dangerous challenges as a reflex—act first and think later. Others can't help thinking first—"If I go help those guys I'll probably get shot. . . . Why doesn't someone else do it? . . . If I don't go I'll probably shoot myself." You work yourself into a fury at those men you must try to save, resenting their putting you in this awful position. Finally you move, you act, and, thank God, you get away with it. But you're not particularly proud, because you know how frightened you were and how close you came to not acting at all. Charles Flood did force himself to act and help the wounded men to safety.

Later he recounts:

> I listened to an amazing variety of stories, as they were matter-of-factly told in the waving firelight. There had been as many battles today as there were men participating.

Still later:

> I was sitting with my radiomen friends, drinking C-ration coffee, when the ground began to shake. We rose and saw, on a distant ridge, a series of close-spaced beige geysers rising from the jungle, as if a huge locomotive were puffing its way past under the trees. It was a B-52 strike, bombs from the eight-engined Strategic Air Command planes raining down unexpectedly in the area where yesterday's North Vietnamese attackers were pulling back toward their bases across the river in their Cambodian sanctuary. The sound swept over us now, a continuous rolling explosion as half our horizon was spotted with leaping fountains of brown smoke and debris.

How's that for description? Such descriptions abound in this highly readable account of how it was with all of us in the "formlessness and frustration" of Southeast Asia.

Washington, D.C.

The Contributors

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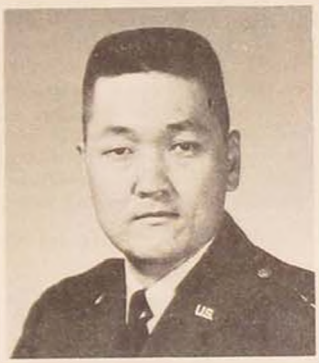

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