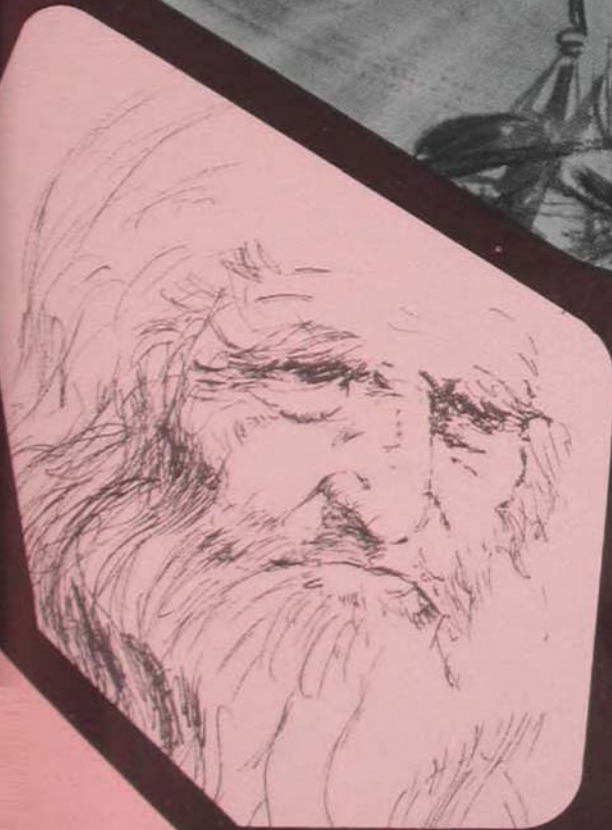AIR UNIVERSITY
REVIEW

ITARY PROFESSIONALS AS POLICY ADVISERS . . . FORECASTING
GRESS OF TECHNOLOGY . . . STOP USING LABOR AS A FREE GOOD

MARCH-APRIL 1969

UNITED
STATES
AIR FORCE

AIR UNIVERSITY
REVIEW

AIR UNIVERSITY REVIEW

THE PROFESSIONAL JOURNAL OF THE UNITED STATES AIR FORCE

the cover

Our artist's compartmented illustration reflects only partially the diversity of the contents in this issue of the *Review* as our contributors, military and civilian, ponder a wide range of topics of concern to the Air Force: Colonel Simons on officers as policy advisers, Major Martino on forecasting future technology, Major Gilster on manpower philosophy, Captain Cerchione on continuity in base information programs, and ten others.
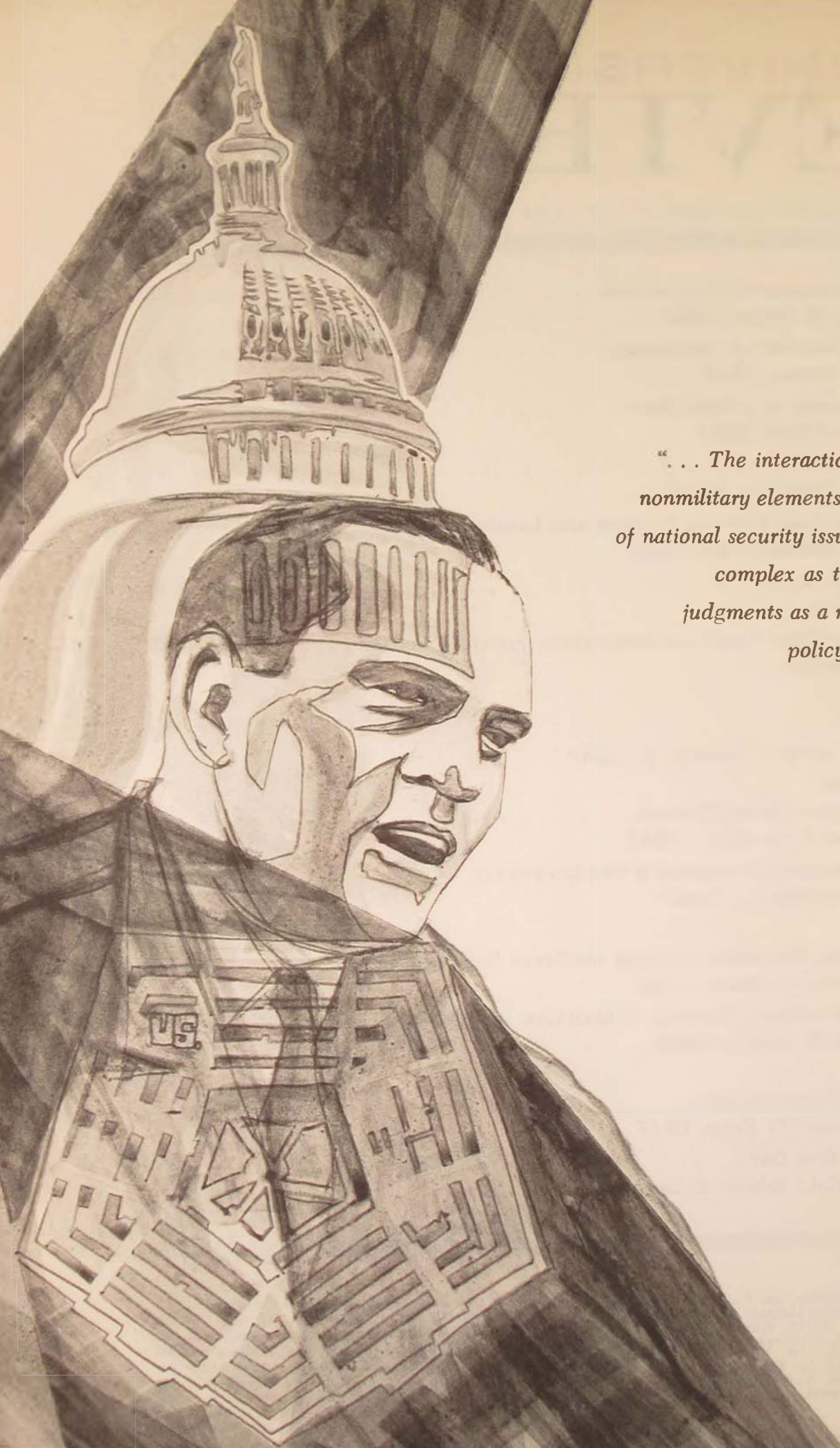
". . . The interaction of military and nonmilitary elements in the emergency of national security issues has become so complex as to require military judgments as a regular part of the policy-making process."

MILITARY PROFESSIONALS
AS POLICY ADVISERS

LIEUTENANT COLONEL WILLIAM E. SIMONS

ALONG the route of the shuttle bus between the Department of State and the Pentagon Building, one passes a new and steadily expanding section of Arlington Cemetery—grim reminder of the responsibility assumed by those who make national security policy. As a result of both public legislation and historical precedent, the military profession shares in that responsibility. Moreover, as a group with what Sir John Hackett calls an "unlimited liability" to support their nation's policies, they have an obligation that goes beyond purely constitutional imperatives.[1] They have both a vested and a public interest in seeing to it that national military commitments are based on realistic and sufficient assessments of our vital national security concerns.

In the continuing controversy over Vietnam it has become the vogue for those critical of U.S. involvement to challenge the policy role of the military. Charges of brainwashing the public have been leveled against that old bugaboo, "the military-industrial complex." Some extremists have demanded an end to "the Pentagon's unwarranted influence" on national policy formulation. But in this respect the current confrontation between Vietnam "doves" and "hawks" has provided only the most recent episode in a recurring controversy in American public life.

Opposition to military influence on policy-making is not new. It played a significant role in the great debate that shaped our Constitution, and it was voiced frequently in the early years of our national political life. More recently, during the Eisenhower Administration,

it was evidenced in foreign policy literature expressing concern over too vigorous prosecution of the cold war. In the Kennedy Administration, it found vocal support in Congressional protests against military participation in programs designed to educate the public on national security issues. Such opposition is merely another aspect of the classic and continuous public "dialectic between freedom and security."[2] On one side of this dialectic, those who see great evil in public policies or actions which encroach in any way on individual liberties feel threatened by the prospect of policy that is influenced by a profession whose *raison d'être* is collective security.

A modern nation-state's performance in both domestic and international affairs is dependent in large measure on its effectiveness in balancing the imperatives of freedom with those of security. Both qualities are essential to the health and growth of a political society. Similarly, improved national performance has been accompanied by an increasingly effective partnership between civilian and military officials in the shaping of national policy. To borrow from Clemenceau, if war is too important to be left to the generals, the maintenance of peaceful order is too complex to be left to the politicians or the political idealists.

By ignoring this reality, critics of a policy role for the military in effect reject the democratic ideals that they openly espouse. The fact is that the archconservative viewpoint they fearfully attribute to a military stereotype could not find voice in American political dialogues if it did not exist already in the civilian community. In a society as firmly

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oriented to the civilian as that in the United States, so-called "military" arguments could not be heard in domestic politics unless they had strong advocates within civilian political circles. I do not call attention to this to suggest either the correctness or incorrectness of such arguments. Indeed, it is evident that they have not represented a dominant view within the electorate in recent years. Rather, the point is that these arguments represent a legitimate point of view that finds a civilian voice at least equally as powerful and as entitled to be heard as the voices of those who deny a proper role for the military profession in policy formulation.

Actually, the military are no more representative of this archconservative viewpoint than the civilian population is of an ultra-liberal opinion. Since the early 1950s professional officers have increasingly exemplified the combination of socioeconomic background and educational preparation that has produced the range of social and political perspectives found in the civilian community. The almost uniformly conservative attitudes of the pre-World War II professionals have been offset considerably by larger numbers of career officers with more liberal views.[3] Of course, on issues of national security the predominant professional attitude remains conservative. However, it is a conservatism stemming from responsibility for that particular aspect of American life, much as business executives are conservative about matters of company finance and college professors are conservative about academic policy. Would anyone suggest that these kinds of attitudes make it improper for *these* men to influence policy in *their* particular spheres?

It is no less proper for the military to contribute to policy-making in the national security sphere. The kinds of responsibilities that affect their attitudes also help equip military officials uniquely for rendering policy judgments. Being charged with the management and direction of military forces committed to the implementation of policy, military officers are particularly aware of the costs in material and human resources which certain kinds of decisions can incur. Moreover,

in addition to their direct staff and field experience, many officers acquire an educational background comparable to that of civilian officials. The combination provides invaluable preparation for evaluating the political-military interactions likely to result from contemplated policy decisions.

With the human resources at its disposal so uniquely qualified to offer practical and rational judgments on vital national security issues, it is essential to the national interest that the military profession take a vigorous part in helping to determine what these policies should be. Indeed, it would be irresponsible if the profession were merely to wait passively while policy determinations were being made. The days of such a simple division of labor between the nation's military and civilian officials have long since passed. The interaction of military and nonmilitary elements in the emergence of national security issues has become so complex as to require military judgments as a regular part of the policy-making process.

There are several reasons why this is so. The basic reason is that all aspects of national security policy relate in some way to the use or condition of military forces. Both deterrence and forward defense policies depend in large measure on the way forces are postured and deployed. If either of these policies should fail to have its desired effect, the forces may have to be committed to combat. Adjustments in national monetary policy may affect troop deployments or weapon and equipment purchases. Domestic economic and social programs may produce changes in military force composition and require adjustments in training programs. Mutual assistance agreements usually create personnel requirements for overseas missions which the military services must accommodate. Arms control negotiations may infringe on the operational procedures and logistics of forces in the field. National budgetary decisions establish real limits on various military programs.

To attempt to develop such policy elements without benefit of military advice could result in serious overcommitments of available resources and in obvious program shortcom-

ings as the policies were implemented. The range of national security problems affecting military forces is more than matched by the variety of nonmilitary agencies and offices whose advice is sought on these problems. One could not expect even career officials in these agencies to be fully aware of the military impact of their recommendations. Less likely to be sensitive to such matters are the more itinerant, bright young men with whom the civilian agencies in Washington seem to abound. These occasional members of the bureaucracy, who move in and out of government or shift from agency to agency, may not remain long enough to experience the consequences of policies on which they render judgment. It is important, therefore, that military professionals, who have had to cope directly with the procedures and effects stemming from various policy decisions, be given opportunity to review and recommend positions on issues likely to affect them.

A second reason is encompassed in an observation of Karl von Clausewitz:

> Wars are in reality . . . only the manifestations of policy . . . ; policy is the intelligent faculty, war only the instrument, and not the reverse.[4]

If one substitutes "military action" for "war," the meaning is sharper; Clausewitz reminds his readers that policy judgments establish the intent and provide the direction for all military activity. It follows, therefore, that procedures are needed to ensure that military activities are carried out in ways appropriate for policy.

Military participation in the development of policy is one means of providing that assurance. Involving the military profession in the development of national security policy increases the likelihood that the full intent of the policy will be understood by a primary implementing agency. Thus, the implementing directives and command judgments can be more readily attuned to the purposes perceived by national leadership. Conversely, the likelihood can be lessened that the implementing actions might inadvertently convey to friend or enemy signals that conflict with the original policy intent.

A third reason for military participation is to ensure that policy decisions are based on realistic appraisals of the strategic alternatives available to the United States. To be sure, the military profession has no monopoly on wise uses of military power. Forward-looking military concepts and timely strategic judgments have also emanated from the civilian research community and from certain civilian officials. Moreover, excellent studies, like Elting Morrison's *Admiral Sims and the Modern American Navy* and Barbara Tuchman's *The Guns of August*, have appropriately illustrated the shortcomings of doctrinaire application of purely military rationale. Still, while perhaps not always proven correct in the strategies they recommend (And who is?), military officials are uniquely qualified to describe the resources and costs demanded by available strategic alternatives.

Realistic strategic appraisals are essential to help national leaders examine critically any schemes for scoring major international coups "on the cheap." While much has been written about the doctrinal biases and past errors of the military, little criticism has been directed toward these politically attractive, intellectually exciting strategies devised by highly persuasive but overly academic theoreticians. These schemes have great appeal for the policy-maker who feels the need and the pressures to take some initiatives, but who recognizes the severe penalties of overcommitment and the difficulties of rallying public support for less palatable though perhaps more assuring measures. The Taft-Radford proposals for relying on offshore air and naval power to contain Communist expansion provide one example.[5] The Schelling theories and analogies on behalf of "compellence" are another.[6] The initial wave of counterinsurgency tracts represents a third.

Such ideas have wide appeal. They give intellectually live persons an opportunity to spin out internally rational theories on matters of public importance. They provide public officials with hopeful ways of dealing with sticky national security problems when more conventional solutions are clearly unacceptable at the time. They may offer defense industries

and "think factories" new areas for research and development. They may also promise individual services an opportunity to regain prestige or support which they perceive as lost.

Not that these kinds of appeal are harmful in themselves. On the contrary, it is out of motivations like these that many sound ideas and effective policies emerge. The critical problem is that such multiple appeals and the pressures they generate have a tendency to obscure the hidden ultimate costs.

Unfortunately, the costs can be high. National military involvements that might be avoided in the face of risks and costs associated with more conventional solutions may be entered into—in the belief that desirable results can be obtained by the "cheap" approach. The plain truth, demonstrated repeatedly in history, is that major international successes seldom come cheap. And, once entered into, national commitments intended to achieve these successes seldom are short-lived. One need only consider the oft-repeated reference to the contributions of "three Presidents" to current Vietnam policy to realize how subtle and far-reaching seemingly "safe" international policy decisions can be.

Being long experienced and professionally involved in the real costs of overseas commitments, the military services must assist in evaluating the alternative strategies available to U.S. leadership.

Actually, the military does participate in the policy-making process—through the Joint Chiefs of Staff, the Joint Staff, and unilateral service channels. As "the principal military advisers to the President, the National Security Council, and the Secretary of Defense," the Joint Chiefs of Staff register policy viewpoints and recommend courses of action to deal with most major national security issues.[7] This can occur either as a result of a request for JCS views, channeled through the Secretary of Defense, or as a result of JCS initiative. Their viewpoints are also injected into various interagency committees by high-ranking members of the Joint Staff. The principal bodies in which they are expressed at present are the Interdepartmental Regional Groups, one for each major foreign policy area. Among other supervisory functions, these bodies are tasked with developing formal statements of U.S. policy objectives, in Country Analysis and Strategy Reports, and with recommending policies to deal with developing situations in the geographical region each group represents. Other Joint Staff officers participate in such interagency functions as the development of Country Internal Defense Plans, which provide guidance relevant for the U.S. Military Assistance Programs (MAP).

Aside from their routine staff contributions to the development of JCS policy positions, the individual services also have unilateral means of influencing policy. Legislation provides the service chiefs with procedures for making their own views known outside the regular JCS-DOD channels. The chiefs may appeal DOD policy recommendations through direct access to the President. They and their deputies are also enjoined to testify before Congressional committees and present their views irrespective of those recommended by the JCS corporately or by the Secretary of Defense. In addition, the individual services can transmit their unilateral views to the Secretary of Defense through their respective civilian secretaries. Concepts and arguments that become altered or beclouded in the process of joint staffing can sometimes be presented more clearly and persuasively through this channel.

However, in the past, the services have not tended to use these direct channels to express individual views on issues that would commit the nation as a whole. Rather, these channels have been used primarily to comment on specific force-related issues—for instance, whether or not to buy a nuclear carrier, whether or not to authorize additional tactical fighter wings, whether or not to create an airmobile division. Although such issues are important to the shape and thrust of national security policy, the commitments they would entail include providing certain levels of funds, supporting particular force levels, or structuring our defense establishment—all elements that can be redressed unilaterally (though perhaps not readily) through subsequent appropriations or legislation. Only indirectly

might these commitments move the nation toward or away from involvement in conflicts or in alliances that determine the thrust of national life for a generation or more in the future. The service chiefs have very rarely addressed this latter kind of issue through their privileged access to the nation's legislative and executive leaders.

Views of the chief military officers on the more deeply committing national policies usually are submitted by the corporate JCS body through formal Department of Defense channels. The Secretary of Defense may or may not forward the views of the Chiefs if they have not been specifically requested by another agency. Similarly, at his discretion, he may or may not explain to the Chiefs the reactions which their views have evoked from other high-level officials. However, the Chairman of the JCS is a regular participant in major policy discussions among principal agency officials, and he is a source of information for the services concerning policy positions taken by other agencies. He also has the opportunity to explain the views of the Chiefs to the other officials. Because of the corporate and formalized nature of the JCS inputs into the policy-making process, their views are stated as tersely as possible and in a way calculated to directly support recommendations for particular decisions or actions. Because theirs is the only regular opportunity for military inputs, the JCS try to present a united front as often as possible. In the process of developing a consensus that can be shaped into a direct recommendation, a compromise is frequently worked out among individual service positions, and many of the nuances and qualifications typical of complex policy issues are either omitted or submerged in language acceptable to all. Such procedures cannot always enable the military profession to contribute the kinds of judgment of which it is capable to the shaping of really critical national policies.

To PLAY a more effective role in the shaping of policy involving long-term national commitments will require at least two kinds of changes in the usual JCS methods of operation.[5] One is the maintenance of a more responsible, independent position on such vital issues. The other is a deeper analysis of contemplated courses of action with respect to long-range costs and risks.

In the past, the JCS has operated according to a "good soldier" philosophy. Under this approach, an attempt is made to keep military matters distinct from political considerations. The latter are regarded as the prerogative of the State Department and the White House, so judgments on these matters are seldom rendered by the Chiefs. Accordingly, there has been a tendency to accept the political objectives stated by civilian authority as given. The JCS have then recommended military measures they consider best suited for achieving those objectives. In addition, when confronted with the decision or when anticipating that their preferred approach was not acceptable to higher political authority, the JCS have sometimes suggested lesser or compromise measures believed to be more acceptable. In such cases they usually have pointed out that the lesser measures would not be likely to attain the objectives; but on occasion they have used such discrepancies to argue more vigorously for that preferred course of action as follow-on measures. Rarely if ever have they questioned the initial objectives or suggested substitution of lesser objectives.

Moreover, when examining and rendering judgment on the outcomes to be obtained from recommended courses of action, the JCS normally provide only "first order" analyses. Their memoranda and annexes usually discuss the immediate results expected from U.S. and friendly actions. They also normally include the range of possible "enemy" responses and a description of those he is most likely to take. Joint Staff attempts to address the consequences of recommended actions or positions seldom include the next steps which the "enemy's" alternative reactions would require from the United States and its allies or the impact which the next round would have on his or our policy commitments. If dealt with at all, the long-term political implications of

these recommended courses of action are given only perfunctory treatment. Finally, and sometimes ultimately, the JCS discussion of consequences may be watered down and worded in such a way as to assure that it does not damage the vital interests of any one of the services.

In order to be effective in helping to shape policies involving possible long-term commitments, the military must take a stronger hand in helping to determine the nation's policy objectives where military activities are involved. In particular, they have an obligation to point out any incompatibility between the desired ends of policy and the politically acceptable means for implementing it—even to the extent of stating a wholly negative position if that be their corporate judgment. In addition, service differences or reservations with respect to this incompatibility must not be submerged in the interest of presenting a united front. Awareness of dissenting or minority views on the part of one or more services could serve to focus interagency discussion on issues that would result in a more realistic appraisal of national aims.

It is essential that this be done, because once objectives have been adopted and national programs initiated, resulting commitments are not readily reduced. Neither is their character easily altered. President Truman's decision to abandon the objectives of unifying Korea by force in 1951 demonstrated the great political cost risked by lowering policy objectives once U.S. forces are committed. It is doubtful that the domestic effects of that demonstration have gone unheeded by astute political leaders. Like military intervention, military alliances and foreign aid programs also constitute public commitments. These, too, cannot be abandoned without penalty of domestic or international political cost.

Public policy objectives cannot easily be compromised by a political leadership under fire from domestic and foreign critics, nor can national commitments be taken lightly. If valid initially, the nation's policy objectives should not be abandoned or emasculated simply because they prove difficult to achieve. Of course errors in judgment will occur, and the policy-

making process ideally should permit a recasting of objectives if an Administration perceives that the costs of achieving them have turned out to be higher than can reasonably be borne. Normally, however, when objectives are realistic, it is to be expected that an initial lack of success will be followed by repeated or intensified attempts. Particularly when committed to assist another nation, a government of the United States—which historically has stressed respect for international agreements freely entered as a key principle of responsible diplomacy—cannot afford to discard such an obligation lightly. For all these reasons it is important that *before public commitments are made* our policy objectives be scrutinized and determined to be reasonable in the light of measures that the nation's leaders feel able to undertake.

In contributing to this vital policy function, the military professional should have an important role (primarily through the JCS) to define the proposed objectives clearly in operational terms. He should explain to other policy advisers and to decision-makers that, given their proposed statement of what the United States hopes to achieve, "the objective behavior patterns of enemy leaders and forces would have to consist of the following . . ." and "these are the kinds of military and political actions the United States would have to undertake to get them to react that way. . . ." In addition, he should make explicit the kinds of enemy behavior likely to result from any lesser or different actions on our part. He should then describe in detail the ways in which such behavior would be different from the patterns corresponding to the proposed objectives. Hence, he would make clear that, if only certain kinds of action are agreeable to the President and his chief advisers, they must recognize beforehand that only certain objectives are reasonable for the nation to endorse. This process would be repeated for different formulations of our goals as many times as necessary to develop a set of operational objectives compatible with the prevailing political mood and the long-term national interest.

Defining objectives operationally is con-

siderably different from the usual JCS practice of saying, "This is what we stand a good chance of achieving, but on the other hand the enemy may do this." It is different, first, because usual practice is to say this and little more, at least until new ground rules are received from the Office of the Secretary of Defense (OSD). Under this new approach, the JCS would in effect be helping to formulate the ground rules as they go along. It is different also because, through this iterative process, professional military judgments would play a major part in determining what the ultimately agreed-upon objectives would be. Instead of acting as a technical bureau, largely self-limited to providing narrow judgments on request, the JCS would be contributing its needed professional insights as a full partner in the policy-making process.

As a companion process to helping determine realistic national policy objectives, the JCS must also help stimulate systematic consideration of the long-term costs and risks incurred by contemplated courses of national action. With their own rather ample staff resources and with support from the service staffs, the JCS could set an example for other contributing agencies by making a deeper, more comprehensive analysis of the broad implications of proposed national security policies than has been the usual practice in the past.

The typical "first-order" analysis of expected results and likely enemy responses is inadequate because international political-military situations are extremely fluid. They contain too many variables and are too dependent upon day-to-day decisions in different governmental and military headquarters to enable sound policy decisions to be based on this kind of analysis alone. For example, in the context of military conflicts, there is ample evidence to indicate that even basically rational and stable considerations like a national commitment must be regarded as a variable. In addition to the expected motivation to try harder when *denied* a goal, governments may also raise their sights in response to *success.* Our own government illustrated this in September 1950, after MacArthur's successful Inchon landing and counterattack against the North Korean Army. The effectiveness of this operation contributed directly to the Truman Administration's decision to escalate its commitment and seek to unify Korea through complete military occupation.[9] Such changes in the ground rules for force employment make many prior calculations and planning assumptions irrelevant.

Similarly variable responses in national commitment may be precipitated by policy decisions short of actual conflict. A familiar argument is that noncommittal declaratory policies which permit modest, pragmatic responses to "enemy" initiatives only encourage him to engage in incremental aggression. Only firm policies, the argument goes, will discourage an aggressor from nibbling away at the position of the U.S. or an ally until he obtains a significant advantage. On the other hand, there are examples of reactions to hard policies that are quite different. U.S. policies toward Japan prior to Pearl Harbor have been interpreted as so frustrating to programs the Japanese government regarded as vital to its national interest that they in fact helped precipitate Tokyo's decision for war.[10] The point is that the motivations of other governments and the compelling political interests of the future frequently are not predictable.

To compensate for these kinds of variables in political-military behavior, contemplated national courses of action must be analyzed carefully in terms of costs and risks. The JCS, in particular, should contribute to this process. The first step in their contribution would be a direct spin-off from a properly conducted effort to define objectives operationally. In the iterative process of determining realistic objective enemy behavior patterns, the JCS should identify several possible actions an enemy might take that would be different from those desired by the United States. They should then make explicit a number of formulations, like "If the enemy does the following . . . then we must take the following next steps or choose among the following remaining options . . . ," provided we continue to pursue our basic objectives. In actual practice, a similar process would be used to refine and recast the

objectives under consideration—before final acceptance. But even after objectives are operationalized and accepted, this basic step in the calculation of risks and costs should be regularly taken as a foundation for subsequent analysis.

Cost and risk analysis should also include work in the following kinds of questions: What different kinds of military actions or military support activities *can* the United States still take, in view of other commitments and interests? At what levels of national commitment could these be sustained? What kinds of additional military commitment is the U.S. public likely to support? Is the enemy vulnerable to these kinds of military or political-military pressures? What "next steps" does he have available to him? In the event of predictable kinds of domestic and international opposition, how can these pressures be sustained together with other vital programs? Do our contemplated next steps offer the enemy a palatable out? What political costs (to him) attend the avenues of retreat left open to him? What factors constrain his commitment or those of his allies? Are these constraints susceptible to reduction or to intensification as a result of contemplated U.S. actions? If the policy confrontation continues or escalates, are events likely to provide enticing opportunities for exploitation by great powers for their global strategic advantage at U.S. expense?

ONLY THROUGH exploring these kinds of questions can a realistic picture be obtained of the full range of costs and risks incurred by the United States through its contemplated course of action. To protests that this would take a lot of time and a large investment of available joint and service staff resources, I can only respond, "Of course!" But in view of the long-term involvements and sustained high costs incurred by a commitment made hastily or in error—or by a commitment that grows as a result of unrealistic initial objectives or seemingly painless incremental steps—I would argue that there is little else in the normal JCS or service staff functions that could perform a comparable service to the nation.

Both the legal and historical bases for a more effective military involvement in national policy-making already exist. The desire on the part of decision-makers for more-comprehensive political-military advice has been made clear. The need for greater assurances against excessive or obscure political-military commitments has been demonstrated. It remains only for the military profession to use the institutional staff structure provided for it to help relieve these shortcomings in the nation's policy-making processes.

Santa Monica, California

Notes

1. Lt. Gen. Sir John W. Hackett, "The Profession of Arms," Lee Knowles lectures at Trinity College, Cambridge, 1962.
2. Michael Howard (ed.), *Soldiers and Governments* (Bloomington: Indiana University Press, 1959), pp. 11–12, 22–24.
3. Compare, for example, the findings of Professor Morris Janowitz in *The Professional Soldier* (Glencoe, Illinois: The Free Press, 1960), in which a major portion of his samplings concentrated on members of the officer corps whose careers were well established prior to 1950, and the findings based on more recent samplings reported in Janowitz (ed.), *The New Military: Changing Patterns of Organization* (New York: Russell Sage Foundation, 1964).
4. Karl von Clausewitz, *On War*, trans. O. J. Matthijs Jolles (Washington: Combat Forces Press, 1953), p. 598.
5. Glenn H. Snyder, "The 'New Look' of 1953," in Schelling, Hammond, and Snyder, *Strategy, Politics, and Defense Budgets* (New York: Columbia University Press, 1962), pp. 393, 410–14.
6. Thomas A. Schelling, *Arms and Influence* (New Haven: Yale University Press, 1966).
7. *Title 10 of the United States Code*, Public Law 1028, 84th Congress, 10 August 1966, Sec. 141 (b).
8. Structural changes in the national security policy-making process may also be required, but they are not the subject of this article.
9. See Richard Neustadt, *Presidential Power* (New York: The New American Library, 1964), pp. 120–35; also Martin Lichterman, "To the Yalu and Back," in Harold Stein (ed.), *American Civil-Military Decisions* (Tuscaloosa: University of Alabama Press, 1963).
10. For expressions of Japan's interests by her policy-makers, see Nobutaka Ike (ed.), *Japan's Decision for War: Records of the 1941 Policy Conferences* (Stanford: Stanford University Press, 1967).
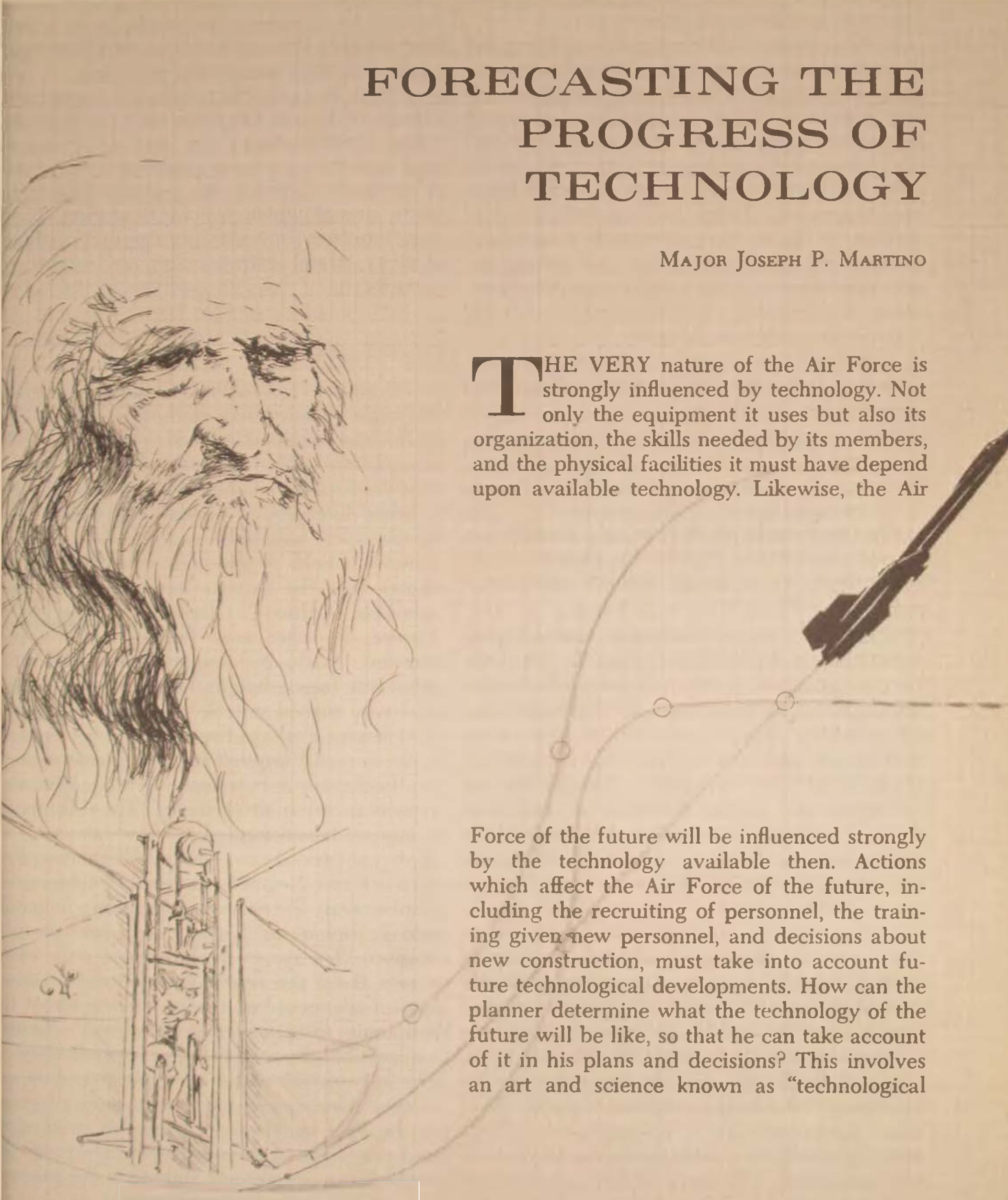
FORECASTING THE PROGRESS OF TECHNOLOGY

MAJOR JOSEPH P. MARTINO

THE VERY nature of the Air Force is strongly influenced by technology. Not only the equipment it uses but also its organization, the skills needed by its members, and the physical facilities it must have depend upon available technology. Likewise, the Air Force of the future will be influenced strongly by the technology available then. Actions which affect the Air Force of the future, including the recruiting of personnel, the training given new personnel, and decisions about new construction, must take into account future technological developments. How can the planner determine what the technology of the future will be like, so that he can take account of it in his plans and decisions? This involves an art and science known as "technological

forecasting." Just what is technological fore-casting? And how is it done?

In a sense, technological forecasting has been going on for centuries. Flying machines, long-distance communications, sound-record-ing apparatus, and so on have been discussed speculatively by many thinkers. Bacon and Da Vinci are only two of the great names associated with speculation of this kind. Since the beginning of the Industrial Revolution, writers of fiction have frequently made fore-casts of advanced technology, as a vehicle for the story they wanted to write. In what way, then, does modern technological forecasting differ from such speculation?

Ralph Lenz, one of the pioneers of tech-nological forecasting within the Air Force, has described it as follows:

> Technological forecasting may be defined as the prediction of the invention, character-istics, dimensions, or performance of a ma-chine serving some useful purpose. . . . The qualities sought for the methods of prediction are explicitness, quantitative expression, re-producibility of results, and derivation on a logical basis.

The differences between technological forecasting and speculation, then, lie primarily in the attempts of the forecaster to achieve precision in the description of the useful ma-chine whose characteristics he is forecasting and in his attempts to place the forecast on a sound scientific foundation through the use of logical and explicit methods. A well-done forecast will state the predicted characteristics of the machine being forecast and make clear the means by which the forecast was arrived at.

However, the forecast of a future inven-tion must be distinguished from the act of invention itself. A forecast may predict levels of performance that are well beyond the cur-rent state of the art; it may even predict levels of performance that exceed the theoretical or physical limits of currently used devices or machines. The forecast will not specify how these limitations are to be overcome; it will state only that by a certain time in the future the limitations will have been overcome by means as yet unknown, possibly including the invention of a new device not subject to the limitations of current devices. In short, a fore-cast predicts that an invention will have been made but does not do the inventing.

How is it possible to forecast the detailed characteristics of future machines, especially when these machines may rely on inventions and discoveries not yet made? A wide variety of methods is in use for making these fore-casts, five of which will be described. These are intuitive forecasts, consensus methods, analogy, trend extrapolation, and structural models.

intuitive forecasts

Intuitive forecasting is almost certainly the most widely used method. It is the kind of forecast obtained by "asking an expert." The assumption behind the use of this method is that the expert in some field of technology has a broad background of knowledge and expe-rience upon which he can draw to forecast where his field is going. However, the record shows that the experts have been far from infallible. Arthur C. Clarke, in *Profiles of the Future*, describes some famous negative pre-dictions, made by unquestioned authorities who were forecasting in their fields of expertise and who turned out to be one hundred per-cent wrong. Perhaps the most striking example is the forecast implicit in the statement made by the British Astronomer Royal in 1956, that "space travel is utter bilge." The Library of Congress has compiled a very extensive list of expert predictions, entitled "Erroneous Pre-dictions and Negative Comments Concerning Exploration, Territorial Expansion, Scientific and Technological Development." As the title implies, this survey includes not only state-ments about the feasibility of certain techno-logical advances but also statements about the economic value of geographic and scientific exploration. Every one of the predictions in this survey was made by a distinguished au-thority who should have been well informed in the field in which he made his prediction, and every one of them was proven wrong, the proof often coming not long after the ink was dry on the page of the forecast.

What is the lesson to be drawn from this? That experts are always wrong, and therefore intuitive forecasts are worthless? Not at all. In the first place, there are many examples of the experts' being right. These examples just don't make as exciting reading as errors do. Second, the fact that people still do consult experts in preference to people who know nothing about a subject indicates that an expert is more likely to be right than is a non-expert. Putting it another way, even though an expert may be wrong, his intuitive forecast may still be the best forecast available. This, in fact, is the nub of the problem. The real trouble with intuitive forecasting, according to Lenz, is that it is "impossible to teach, expensive to learn, and excludes any process of review." The real goal is not to get rid of the experts but to devise methods which are teachable and which are less intuitive and more explicit, so that it becomes possible to have a forecast checked by several people, just as any engineering design or calculation can be checked.

consensus methods

One of the simplest methods for overcoming some of the disadvantages of intuitive forecasts is the use of a panel of experts. The notion behind this is that the interaction between several experts is more likely to ensure consideration of aspects which any single individual might overlook. More of the factors bearing on a situation are likely to be considered, and there is a better chance that a hidden bias of one panel member will be offset by a contrary bias in another member. The forecast may be prepared by a panel meeting face to face, or it may be prepared by a panel which never meets but interacts in other ways.

Probably the most common type of consensus forecast is that prepared by a panel which meets together. This method has proven successful in the past. The U.S. federal government, especially the Department of Defense, has made extensive use of this method. One of the largest groups ever assembled for this purpose was the Air Force's Project Forecast, which had representatives from 30 Department of Defense organizations, 10 non-DOD federal organizations, 26 universities, 70 industrial corporations, and 10 not-for-profit corporations. These people were organized into 12 technology panels and 5 capability panels. They met during a six-month period in 1963 and produced a 14-volume report on the technology required to meet the defense needs of the 1970s.

Despite the widespread use and apparent success of face-to-face panels, they do have a number of disadvantages, all stemming from the well-known problems of committee action. A dominant personality may unduly influence the results. Fatigue of the group as a whole may result in a false consensus. There may be an unwillingness on the part of members to abandon a publicly expressed opinion, even after hearing contrary arguments. And there is the opposite possibility of producing a watered-down least common denominator out of a desire to avoid offending anyone.

In an attempt to overcome these difficulties, researchers at the RAND Corporation devised the "Delphi Procedure," which makes use of a panel of experts to arrive at a consensus but avoids the drawbacks of committee action by using a series of questionnaires instead of having the committee members meet face to face. In the first questionnaire, they are asked to make their forecasts on the topic of interest. The replies are compiled as a composite forecast, which shows the extent of the differences of opinion among the members of the panel but preserves the anonymity of the panelists and their opinions. In the second questionnaire, the panelists are asked to comment on the composite forecast and give reasons why they disagree with the composite result, if they do disagree. In the third and subsequent questionnaires, the panelists are presented with the current composite forecast as well as a summary of the reasons the panelists gave for changing it (i.e., arguments as to why an event would take place earlier or later than the majority of the panel thinks it will).

In each succeeding round of questionnaires, the panelists are expected to consider the arguments of the other panelists and either

defend their positions with counterarguments or change their positions to agree with the majority. The anonymity of the procedure makes it easier for the panelists to consider arguments on their merits, without being influenced by their personal opinions of the panelists who originated the argument. In addition, panelists find it easier to abandon their earlier positions without losing face, if they become convinced that their earlier positions were in error. In practice, four or five rounds of questionnaires are sufficient for the panelists to converge on an agreed prediction. Figure 1 shows the behavior of one experimental Delphi panel on a single question: the estimated date of an anticipated event. The three panelists in the middle retained their original opinion. The two "early" and two "late" panelists revised their initial opinions to converge toward the middle. One member, holding an extreme position, neither influenced the remainder of the panel nor was influenced by it. This result is typical of panel behavior in a Delphi sequence. Some experiments at RAND indicate that the Delphi Procedure does improve the accuracy of group forecasts, but the method is too new to have received extensive validation. It does offer considerable promise

and undoubtedly will be more widely used in the future. One of the biggest Delphi panels ever formed was used by the corporate planning office of TRW, Inc., to obtain a technological forecast in the areas of technology of most concern to the company.

The consensus methods go a long way toward overcoming some of the objections to intuitive forecasting. Because of the interaction between the panelists, arguments for and against specific predictions tend to be made explicit, and it is possible for an outsider to review the proceedings of the panel after the forecast is complete, to see what factors the panel considered and how it arrived at its conclusions. However, there is still a large subjective element in forecasts obtained by consensus methods. Other methods of forecasting make a deliberate attempt to reduce this subjectivity.

forecasting by analogy

This method attempts to find analogies between the thing to be forecast and some historical event or well-known physical or biological process. To the extent that the analogy is a valid one, the original event or process can be used to make a prediction about the future development of some area of technology.

The use of historical analogy is actually quite common in everyday life. Expressions such as "We tried something like that once before and here's what happened" are certainly well known to everyone. The major difference between the ordinary use of historical analogy and its use in technological forecasting is that the technological forecaster uses it consciously and deliberately, examining the "model" situation and the situation to be forecast in considerable detail to determine the extent to which the analogy between them is valid. The introduction and spread of an earlier technological innovation, the social impact of some previous invention, the delay between the introduction of some specific technology in one social situation and its introduction in some other and different situation, the delay between the adoption of a specific tech-

Figure 1. Converging estimates of the date of an event
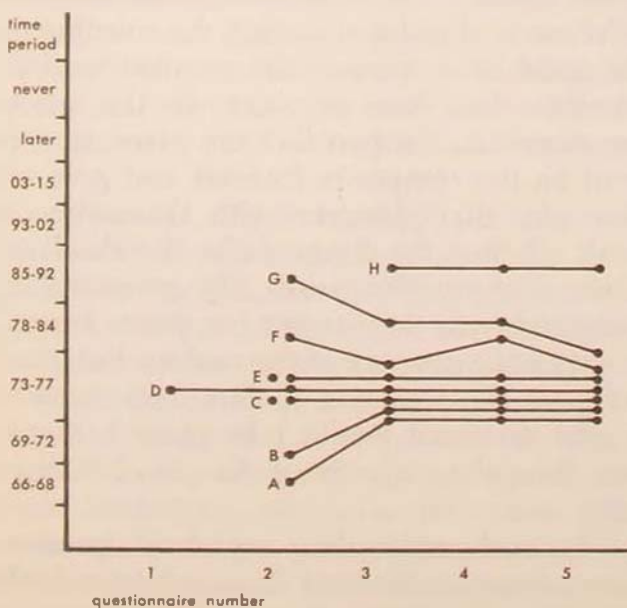
nology in a certain industry and the adoption of a successor technology in the same industry —all are illustrations of historical situations that can be used as models for predicting the future progress of some technology under study. Even though history never repeats itself exactly, the use of historical analogies can give considerable insight into the likely course of development of some technology of current interest. An example of an extensive use of this approach is the book, *The Railroads and the Space Program: An Exploration in Historical Analogy* (Bruce Mazlish, ed.). As the title indicates, the contributors to this volume attempted to find similarities between the U.S. space program and the development of the railroads in the nineteenth century and to use these similarities to make predictions about the space program.

Another type of forecast by analogy, much less common in everyday life but in fairly wide use by technological forecasters, is the analogy with physical or biological processes. An especially common approach is the use of growth curves to predict the advance of some technology. Both individuals and populations of many living species have growth curves that follow an S shape. It has been observed that many technological devices follow this same pattern—a slow start, then a rapid rise, followed by a leveling off and obsolescence. Figure 2 shows clear-cut examples of this pattern in the field of illumination technology. Here two specific classes of devices illustrate this growth pattern. There are actually good reasons for the similarity between growth in performance of a technological device and the growth of an individual or population. In both, growth tends to be the cumulative result of a large number of separate accretions or advances, and there are often considerable difficulties to be overcome at the outset, causing the growth to be slow. Once these difficulties are overcome, the stage is set for rapid growth, until some limit is encountered. Biologically, this limit is usually environmental, such as a fixed food supply. Similarly in technology, the limit is usually "environmental" in the sense that it is extrinsic to the technology-generation process. It frequently comes
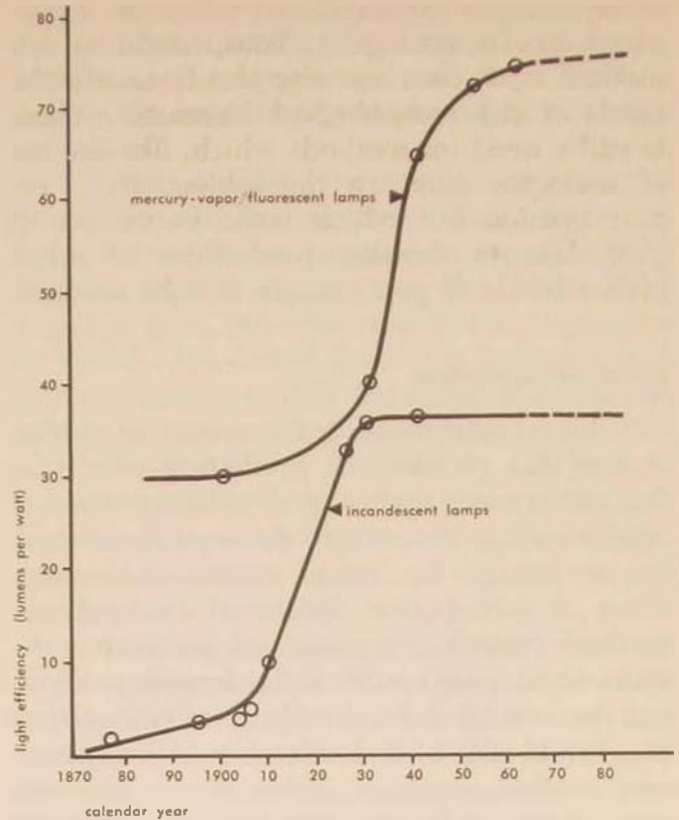
Figure 2. S-*shaped growth curves of lighting devices*

from some natural limit on the performance of some specific class of device. Since technologies do tend to follow the S-shaped growth curve, it appears natural to try to forecast technological progress by using this method. It is especially applicable to technologies where there is some known upper limit to the possible performance, such as the speed of light or the achievement of 100 percent efficiency.

The major strength of this method is that it eliminates much of the subjectivity of either intuitive or consensus methods of forecasting. Its major weakness, however, is that the exact extent of the analogy between the model and the thing to be forecast is often not evident until too late to do any good. For instance, the plot of performance versus time for some device often gives no advance warning that the curve is going to change from slow start to rapid growth or pass through the inflection point and slow down. The points at which

these changes occurred can often be recognized only in retrospect. Thus, useful as this method is, it does not completely satisfy the needs of the technological forecaster. There is still a need for methods which, like the use of analogies, eliminate the subjectivity of expert opinion but which make better use of past data to develop predictions of when higher levels of performance will be reached.

trend extrapolation

Trend extrapolation is one way of getting around the problem of predicting when the S-curve is going to change direction. Instead of concentrating on a single device and attempting to predict the future course of development of that device, the trend extrapolation method considers a series of successive devices which performed similar functions. These can be considered individual representatives of a broad area of technology. It is then necessary to find a single performance characteristic of these devices that can be expressed numerically. The forecast is made by plotting the performance of each device against the year in which it was achieved. If a trend is apparent, this trend is projected and becomes the forecast. An example is shown in Figure 3, which considers the same area of technology as Figure 2, that is, illumination technology. Instead of plotting the course of development of a single device, however, each successively developed device becomes a single point on the curve. Note that even though not all the devices shown in the figure are electrical in nature, the energy consumption of each of them can be converted into watt-equivalents, so that a uniform ordinate, efficiency in lumens per watt, can be used for all the devices. While several points could be plotted for each device, there is usually no value in doing so. Successive devices usually have major differences in performance, on the order of 100 percent or more, while improvements to a single device usually are on the order of a few percent. If the curve were drawn in detail, with several points for each device, and if an accurate representation were made of the plateaus usually reached by specific devices,
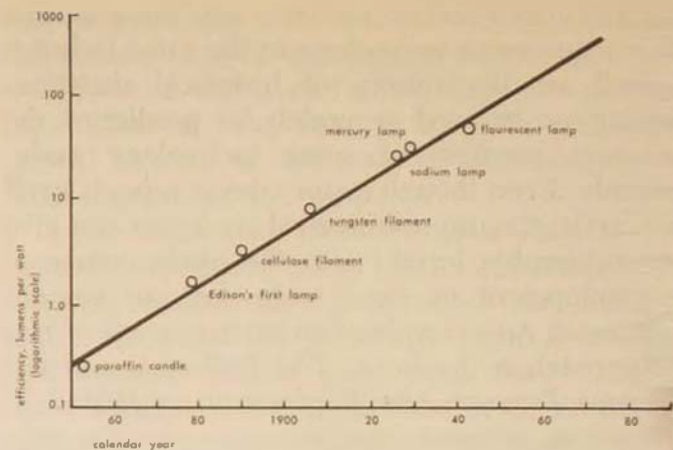

Figure 3. Trend in improvement of illumination devices

the curve would actually be in stairsteps. The straight line shown is the envelope of the true curve. Hence this method of forecasting is sometimes referred to as the use of "envelope curves."

Use of trend extrapolation in this way avoids the problem of making detailed predictions about the development of specific devices. On the other hand it provides less information about the actual devices that will make it possible to achieve the predicted performance. The curve says only that the performance will be attained. It does not say anything about whether existing devices can be improved to attain that performance or whether a new device will be invented.

There is a useful variant of the straightforward form of trend extrapolation, known as the precursor method. It involves finding a relationship between two areas of technology with one leading the other by a predictable interval. An example is shown in Figure 4, which compares the top speeds of U.S. combat aircraft with those of U.S. transport aircraft. As the trend lines indicate, combat aircraft appear to be leading transport aircraft by a slowly widening gap. On the assumption that these trends will continue, such a graph could be used to predict the future speed of transport aircraft, based on already-achieved speeds of combat aircraft. The credibility of this type of forecast is higher than that of a straight-

forward trend extrapolation, especially where there is some logical connection between the two trends. Such a connection is plausible in the case of combat and transport aircraft. However, in some apparently correlated trends, there may be no logical connection whatsoever between the two technologies. Hence the method must be used with care. In any case, the method cannot be used for making projections farther ahead than the lag times between the two technology areas.

To digress a little, the data shown in Figure 4 can also be considered as two examples of straightforward trend projection. As such, they contain some interesting features. The highest-speed bomber point on the graph represents the SR-71, which was developed in secret by Lockheed for the Air Force. The date shown for it is the date its existence was publicly announced, and the speed shown is its publicly announced speed. Since it was probably operational before its existence was announced, the point should probably be moved to the left. Also its actual top speed probably exceeds that publicly announced and the point should be moved higher. Applying either or both of these "correction factors"

Figure 4. Speed trends of combat and transport aircraft
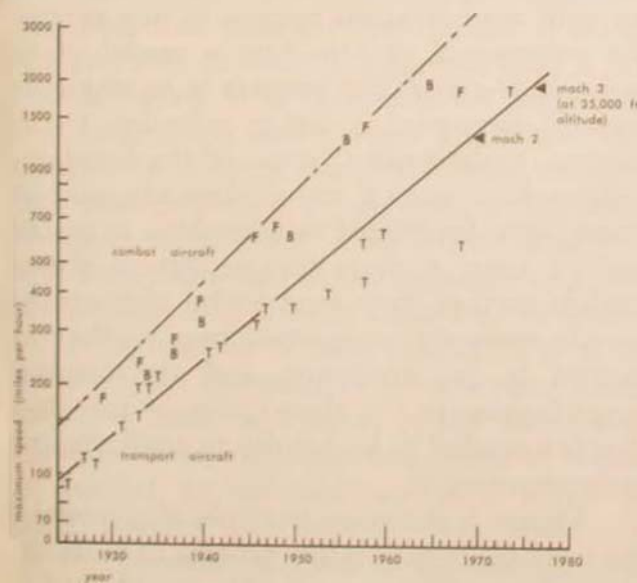
would move the point closer to the trend line for combat aircraft. The lesson here is that even secret technological advances tend to follow the same trends as preceding nonsecret advances.

Now consider the points representing transport aircraft. As they show, there has been essentially no increase in top speeds for new transports throughout the 1960s. This resulted from the following factors: operation at speeds just below mach 1.0 produces difficulties associated with the onset of compressibility and formation of shock waves; operation just above mach 1.0 is highly uneconomic because of high drag penalties; the technology needed to operate in the efficient but high-temperature, high-supersonic regime was not yet available in transport aircraft. As a result, several successive transport designs continued to have top speeds in the neighborhood of 550 knots. If the graph showed all the civilian transports introduced in the 1960s, the impact of these factors would appear even more clearly. However, the highest transport point shown (actually a prediction, since it has not been achieved yet) is for the supersonic transport (sst). Once the technology became available to permit operation at speeds near mach 3.0, where operation is much more efficient than at speeds just above mach 1.0, transport design reverted to the trend line followed by most preceding transports. The factors that dominate transport design were temporarily stymied by the difficulties of transonic operation, but once this barrier was hurdled they again exerted their control.

Trend extrapolation, whether of the straightforward variety or the precursor method, is at once the simplest and most sophisticated method of technological forecasting currently available. In concept it is quite simple. It involves only the plotting of some quantitative characteristic of the technology against time and extrapolating any observable trend. But sophistication can enter this process quite rapidly, one of the first possible sources being the choice of the characteristic to be plotted. In the case of aircraft, for instance, speed is a fairly obvious characteristic. However, for transport aircraft, productivity, measured in

tons payload × miles-per-hour cruising speed, is somewhat less obvious but is more directly related to their real function than is top speed. (Such a plot, incidentally, would show that throughout the 1960s the productivity of successive new models of transport aircraft grew steadily, even though the top speed remained relatively static.) In any event, considerable sophistication may be involved in choosing a characteristic that not only truly represents the ability of devices to function as expected but also can be applied to successive devices that may operate on different principles while performing the same function. Likewise, choosing the scale on which to plot the characteristic is not always simple. Probably a logarithmic scale is most frequently used. Others such as cumulative normal distribution, cumulative log-normal distribution, etc., may be used. The usual purpose in choosing a scale is to allow the trend, if any, to show as a straight line. For instance, if the growth of the characteristic being plotted is expected to be exponential, plotting on a logarithmic scale will produce a straight line. If the scale is poorly chosen, the trend may be nonlinear and therefore hard to project. Finally, even with a characteristic and a scale carefully chosen, the points do not usually lie on a smooth curve. Drawing a trend line may involve nothing more than an "eyeball" fit with a straightedge, or it may involve sophisticated mathematical curve-fitting techniques. Thus while trend extrapolation is simple in principle, it can rapidly become sophisticated in use.

However, whether the extrapolation method is used in its conceptual simplicity or involves some sophisticated mathematical techniques, it is based on an important underlying assumption: that the conditions which prevailed in the past and were responsible for the well-behaved trend observed in the data will continue unchanged into the future, at least as far as the time of the desired prediction. No amount of mathematical sophistication in treatment of the data can make up for the breakdown of this assumption. In many cases, though, the exact nature of the conditions responsible for a trend is not even known, let alone whether they will remain constant.

But suppose it is known that some relevant conditions are going to change. Then it may no longer be possible to make a prediction by extrapolating past trends. For instance, suppose a majority of the public decided it simply would not tolerate the operation of an sst over inhabited land areas. Under these changed conditions, a straightforward projection of the past trend in transport aircraft speed would not be justified. Or suppose the government or a major corporation makes a policy decision to accelerate the growth of some technology by deliberately changing some relevant condition, such as level of resources applied—as, for instance, the federal government did to rocket technology with the decision to put a man on the moon. Trend extrapolation gives little or no hope of providing accurate forecasts of the progress of the accelerated technology. Not only that, it gives no guidance as to which conditions should be altered, to achieve a desired rate of progress. In short, if a change in the relevant conditions is big enough, whether it is forecast but not under anyone's control or is deliberately introduced by someone, extrapolating past trends is of little value as a means of forecasting.

structural models

The structural model represents an attempt to develop a mathematical or analytical model of the technology-generation process. As with mathematical models of any process, the purpose of constructing a model of the technology-generation process is to single out certain elements as being relevant to the process, make explicit some of the functional relationships among these elements, and express these functional relationships in mathematical form. A characteristic feature of such models is that they tend to be abstractions; certain elements are omitted because they are judged to be irrelevant, and the resulting simplification in the description of the situation is intended to be helpful in analyzing and understanding it.

Figure 5 shows an example of a model of the technology-generation process in block diagram form. This represents an attempt to
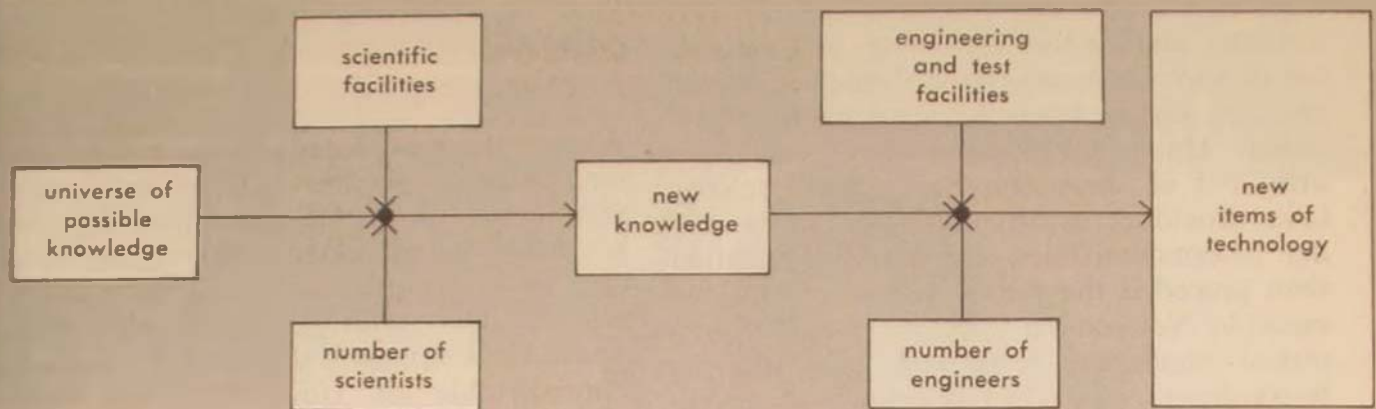
Figure 5. Structural model of the technology-generation process

model the flow of knowledge, from discovery through engineering into technology. In principle, a mathematical relationship would specify the rate at which new knowledge is produced, based on the number of scientists at work and the type and extent of scientific research facilities available to those scientists. Similarly, a mathematical relationship would specify the rate of progress of some parameter of technology (such as lumens per watt, used in Figures 2 and 3), based on the rate of production of new knowledge and the engineers and facilities available to exploit the new knowledge.

Each of the blocks, of course, conceals a submodel. For instance, the number of scientists available to work in a specific field is not a static figure. It is increased by migrations from other fields and by new graduates from colleges. It is decreased by deaths, emigrations, and diversions of scientists to teaching. Diversion to teaching, while it may lead to a short-term reduction in the numbers of scientists working full-time in some field, is essential if the number of new graduates is to be increased. So the number of scientists available, over time, is a result of the interaction of several complex phenomena, some of which are subject to manipulation as a result of policy choices. Furthermore, the blocks are not independent of each other. An increase in the amount of scientific research facilities

available can be accomplished only by diverting engineers from the exploitation of new knowledge to the design and construction of new facilities. These submodels and their interactions are typical of what is involved in constructing a model of the technology-generation process and of finding mathematical expressions for the relationships among the elements of the model.

What is the current state of the art in constructing structural models of the technology-generation process? Unfortunately, existing models are both quantitatively and qualitatively deficient. In the model of Figure 5, for instance, we simply do not know enough to specify the mathematical relationship between number of scientists at work in a field, the amount of research facilities available to them, and the rate of production of new knowledge. It is clear that the rate of production of new knowledge increases with an increase in the number of scientists working in a particular field. However, the relationship is not a simple one, and in particular it is not linear. Simply because of communication problems, the average rate of discovery per scientist falls off as the number of scientists in a field increases. Because of these and many other problems, today it is not possible to make quantitative statements about the relationships shown in the model. At best, then, such models can only be qualitative.

However, here again the lack of knowledge is a hindrance. The model shown, for instance, implies that technology is produced out of knowledge generated through scientific research. But we know this is not the full story, either. Many instances of new technology arise out of sheer empiricism, with science later providing explanation and understanding. Thermodynamics, which followed rather than preceded the steam engine, is only one example. Not enough is known about the empirical foundations of technology to allow us to construct a model of the technology-generation process that is even qualitatively correct.

Despite the deficiencies of the current models, constructing models is one of the most promising lines of development in improving our capability to do technological forecasting. First of all, it is clear that qualitatively and quantitatively correct models of the technology-generation process will allow us to go beyond any of the other currently used techniques. Second, the research needed to develop the knowledge to improve current models is fairly well defined and is being actively pursued at a number of centers. Hence it is fairly safe to predict that within a few years rudimentary models will be available that will allow us to make quantitative predictions of the impact on technological growth of changes in allocation of resources, construction of new facilities, etc. Instead of being forced to assume that conditions will remain unchanged, we will be able to determine the effect of deliberate changes in conditions.

WITHIN the past decade or so, technological forecasting has progressed from something resembling a black art to the point where it is beginning to look like a science. It will probably never approach being an exact science, since it deals with predicting what human beings will do, and they are a notoriously unpredictable lot. However, it has already reached the point where we can identify meaningful measures of technological progress and use them to predict further progress, provided that the conditions which existed in the past remain unchanged. Under some circumstances, we can even make qualitative predictions about the impact of policy decisions on technological progress. In the reasonably near future we can expect to be able to make quantitative predictions about technological progress, given information about the factors which determine that progress. We should even be able to make deliberate plans to achieve specified rates of progress and know what it will cost in men and resources to achieve those rates. When that day arrives, technological forecasting will be used as regularly in making business and political decisions as economic forecasting is now.

Holloman AFB, New Mexico
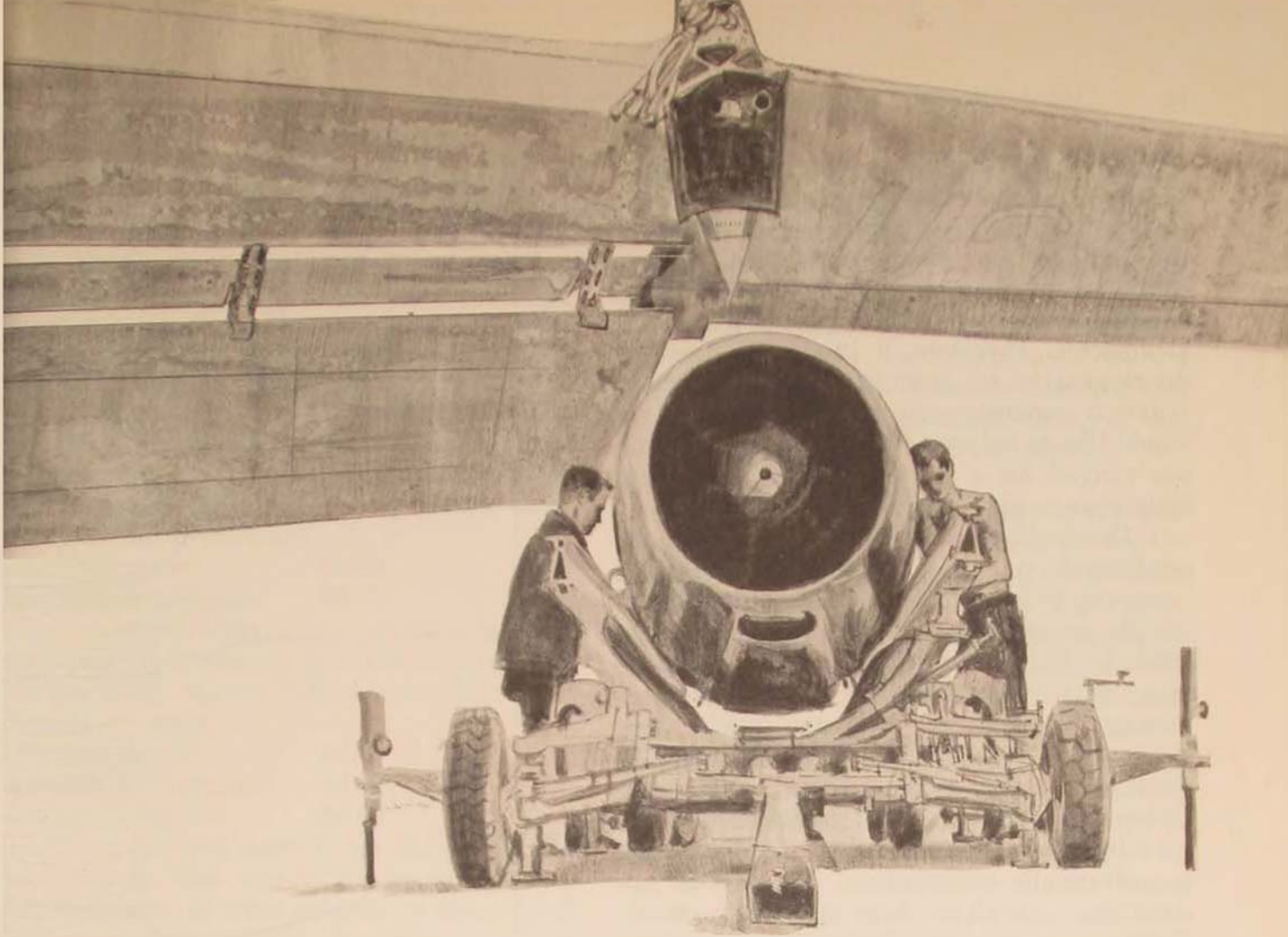
LET'S STOP USING LABOR AS A FREE GOOD

MAJOR HERMAN L. GILSTER

Military problems are, in one important aspect, economic problems in the efficient allocation and use of resources.

Hitch and McKean, *The Economics of Defense in the Nuclear Age*

EARLY IN 1968 a member of the faculty at the USAF Academy, with representatives from the Directorate of Materiel, Strategic Air Command, and the Boeing Company, completed an extensive study in the B-52 maintenance field. As a result of this analysis, new light has been cast on the problem of efficiently maintaining military aircraft.

A major finding of this study was that a more efficient allocation of maintenance resources in military units is needed. Our extensive use of labor as a free economic

good does not conform with good business practices. A free economic good is defined as a good that has been purchased, is sitting on the shelf, and has no alternative use. Maintenance labor, however, is now a scarce item and has excellent alternatives outside the military sector. Therefore, it cannot be used indiscriminately to accomplish any objective. Labor is expensive—more expensive than we would like to believe. For this reason the time has arrived for a re-evaluation of our basic maintenance philosophy.

The findings discussed in this article are predicated on data provided by the Boeing Company on the entire B-52 fleet during the sample period from August 1965 to August 1966. Air Force Manual 66-1 failure and man-hour data were subjected to an intensive sorting, purging, and merging program, to eliminate all but true failure data. These data were then mated with Air Force Technical Order Form 16 operational data on a monthly basis by aircraft serial number to provide 6326 aircraft-month observations. These 6326 observations contained data on approximately 35,000 stateside B-52 flights for a total of 343,000 flying hours, 1,320,000 malfunctions, and 3,720,000 man-hours required to repair these malfunctions.

During the sample year the Strategic Air Command experienced dramatic changes in its maintenance force levels—in total man-hour and skill availability. (Figure 1) The graphs reflect the number of mechanics available per sortie at each of five time periods. Only personnel in the organizational, field, and armaments and electronics maintenance squadrons actually involved in aircraft repair are included; administrative and other support personnel were excluded from the totals.

The top graph shows that total man-hour availability per sortie dropped by 19 percent during the period. The bottom graphs display the changes in man-hour availability by skill level (codes 5, 7, 3, and 9). As can be seen, the skill composition of the force experienced a considerable change. The main differences are reflected in the higher proportion of 3-level and lower proportion of 5-level mechanics in the force at the end of the period. Actually,
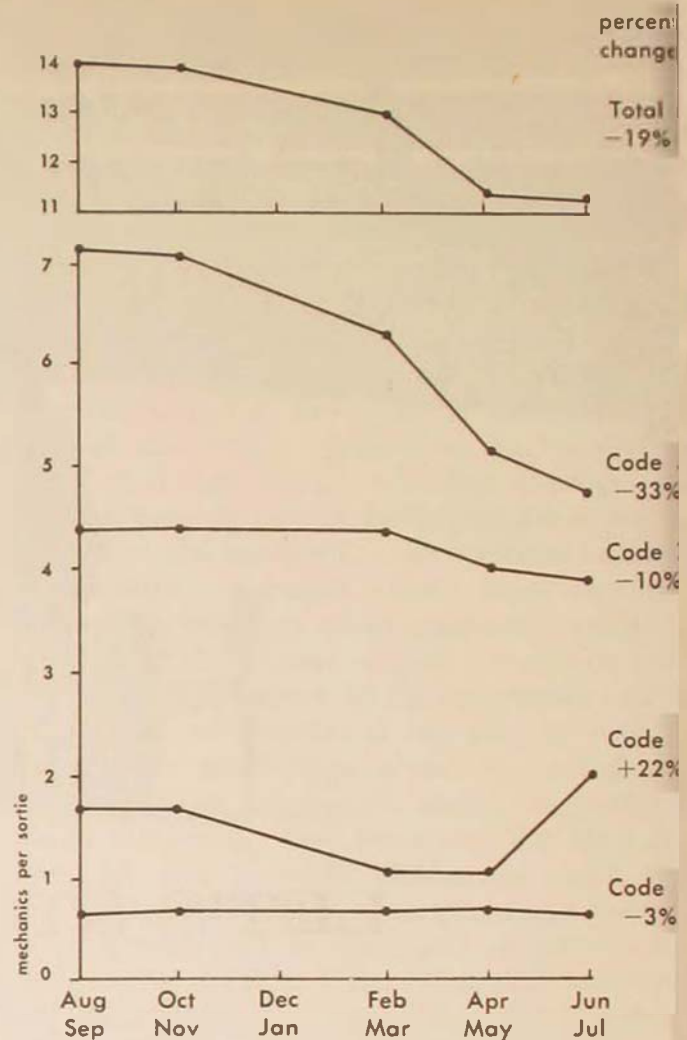
Figure 1. Available mechanics by skill level, August 1965—August 1966

these changes are based on the entire force and may be somewhat conservative if only the stateside force is considered, given the fact that some of our more highly skilled mechanics were sent to Southeast Asia during this period.

One of the most important trends depicted by Figure 1 is the large exodus of 5-level mechanics, the personnel who perform the majority of the direct labor on the aircraft. They are predominantly first-termers who obviously have found a good alternative occupation outside the military service. The paramount question now becomes, "What is all this costing us?" What is the true cost of retaining and utilizing labor in the Air Force?

The True Cost
of Labor

There are no satisfactory estimates of what an hour of direct labor on the aircraft costs the Air Force. Planning figures provided by military publications, such as Department of Defense letter, "Budgeting and Accounting for the Cost of Military Personnel Services for FY 1967," clearly underestimate the true cost. For example, the annual rates established for the two grades that perform most of the direct labor on the aircraft are:

sergeant	$5668
staff sergeant	$7087

Deflating these rates by the planning figure of 1680 annual productive man-hours established by Air Force Manual 400-12 gives the following hourly costs:

sergeant	$3.38
staff sergeant	$4.22
average	$3.80

It should be emphasized that this is not the hourly wage that accrues to the mechanic; it is an estimate of what an hour of direct labor on the aircraft costs the Air Force. Even so, it is too low and as such does not reflect the true cost of retaining and utilizing mechanics in the service.

For this reason the economist's concept of "opportunity" or "alternative" cost might provide a more accurate measure of the real value of a man-hour of labor. The economist and the accountant view costs in a somewhat different light. To the accountant, the residual that remains after all the factors of production have been paid is defined as the firm's profit. To the economist, part of this profit is viewed as a cost. If the entrepreneur has contributed his own talent to the firm, he must be remunerated for this contribution at the prevailing market rate; otherwise, it would benefit him to invest his talent in an alternative line of endeavor. The price paid the entrepreneur to retain his services must be at least as high as he could obtain in his best alternative. This price is defined as the entrepreneur's opportunity cost of remaining with the firm. It is a true cost of operation and must be subtracted from the accountant's profit to determine the economist's true or economic profit of the firm.

The true or opportunity cost of an Air Force mechanic can be derived in much the same manner. It is the price he could command in his best alternative line of endeavor. For an Air Force mechanic the alternative would undoubtedly be employment with a commercial airline. To determine the true cost of a man-hour of maintenance, then, we can use the wage scale currently in effect for airline mechanics.

A check with the major airlines revealed that a mechanic can expect to earn, on the average, $4.66 an hour in pay and fringe benefits within two years after leaving the service. This is probably the figure upon which he bases his decision to leave. If this wage is not paid, either explicitly, or implicitly through some factor such as esprit de corps, the mechanic will leave the service for his best alternative. The graphs of Figure 1 show that this is exactly what has been happening. The airline wage can therefore be considered the true cost of retaining mechanics in the Air Force.

Based on this figure, the mean man-hour cost per sortie for the sample described above was $498. This means that it cost the Strategic Air Command approximately $20 million in maintenance repair man-hours to generate the 40,046 B-52 sorties flown between August 1965 and August 1966. Maintenance labor is indeed an expensive item.

Use of Labor
as a Free Good

The belief that the Air Force needs a basic change in maintenance philosophy is based on the following findings:

(1) Approximately 20 percent of the total maintenance actions taken on military aircraft result from inadequate diagnosis and repair of previous system failures.

(2) Effective maintenance can be predicated more on the skill of the mechanic than on the number of man-hours expended on the repair of failures. As the skill composition of the force declines, the failure rate increases.

(3) Man-hour behavior must adjust to the

contingencies of the situation; i.e., labor is treated as a free good.

Take point number three first. Dramatic evidence of this phenomenon can be obtained by expressing the number of malfunctions per sortie and the number of man-hours expended per malfunction as a function of aircraft age. Regression equations estimated from the sample data described earlier are plotted in Figure 2. These estimates are based on 6326 aircraft-month observations and are statistically significant beyond the 99 percent level of confidence. Calendar age provided a more powerful relationship with the maintenance criterion variables than did accumulated flying time on the aircraft, so calendar age was used throughout the analysis. The age of the aircraft is based on the date of delivery to the Air Force.

It can be seen that the traditional U-shaped failure curve has been statistically verified. The failure rate declines until an aircraft is 4.5 years old and then begins to increase at

Figure 2. Effects of aircraft age on malfunction and man-hour behavior

a faster rate. What is particularly interesting, however, is the inverse U-shaped relationship between man-hours per malfunction and aircraft age. The severity of malfunctions is certainly not inversely related to the number of malfunctions in this manner. The reason for the inverse relationship is that manning authorizations are predicated on the number of aircraft a unit possesses and not on the age of the aircraft. A given labor force must adjust to the workload regardless of whether it is light or heavy. To put it simply, labor is treated as a free good.

The net result of this policy is that personnel in units with heavier workloads must work much more rapidly than personnel in units where the workloads are lighter. One likely reason for this is that the former's workday extends into overtime hours for which no compensation is paid. Such practices could give the mechanic additional justification for leaving the service for the more lucrative wage paid by the commercial airlines. Retention rates of 17 Strategic Air Command wings by maintenance squadron during the sample period strongly suggest that this indeed was the case. The regression equations for retention rates of first-termers as a function of workloads are plotted in Figure 3. Those units with heavier workloads did have lower retention rates.

With this departure, points (1) and (2) come into play and accentuate the problem. As newer, unskilled mechanics are substituted for the departing skilled mechanics, the total workload again increases due to ineffective diagnosis and repair of previous failures. We soon find ourselves in a vicious, expensive spiral. At the same time the cost of labor is rising, its productivity is declining.

Proposals for a More Equitable Allocation of Maintenance Resources

The prominent influence of age on aircraft maintenance rates leads one to believe that a more equitable allocation of maintenance resources among SAC units is needed. Before any
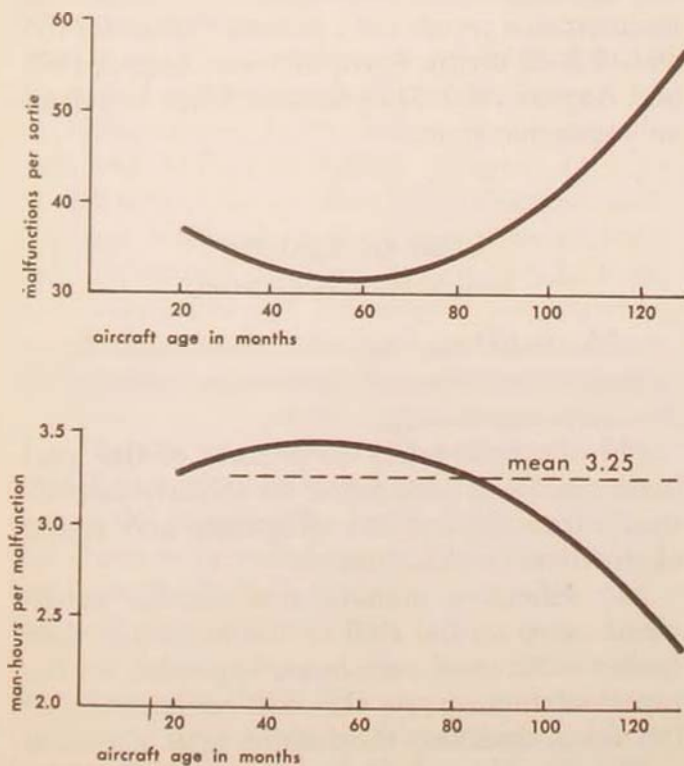
Figure 3. Relationships between first-term retention rates and workloads by squadron

such reallocation can be made, however, an appropriate model for man-hour estimates is required. Extensive research of individual flight data revea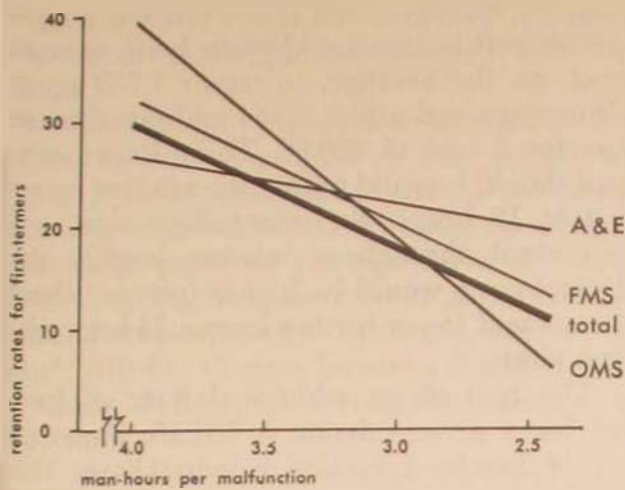led that there exists a causal or recursive relationship between certain policy or explanatory variables, malfunctions, and the number of man-hours expended in repairing these malfunctions. This causal relationship can be specified in the following regression model:

$$\text{malfunctions} = \alpha_1 + \sum_1^n \beta_{1i} X_i + u_1$$

$$\text{man-hours} = \alpha_2 + \gamma_2 \,(\text{malfunctions})$$
$$+ \sum_1^n \beta_{2i} X_i + u_2$$

The α's, or constant terms, reflect fixed costs plus the mean positive influence of any variables not included in the model. The β's equal the marginal influence of the included policy variables (X's) on malfunctions and man-hours while γ_2 gives the independent effect of the number of malfunctions on man-hours. The u's are error terms which are assumed to be randomly distributed with a mean equal to zero.

The recursive model depicted above provides several features that are not found in other formulations. First, the influence of policy variables on the number of failures can be determined. These results are of interest not only to the cost analyst but also to the reliability engineer who in the future must take these factors into consideration in the development of new and improved equipment. Second, the coefficients of these same variables in the man-hour equation, with the effect of malfunctions held constant, indicate whether these factors also influence the severity of malfunctions.

To eliminate the inverse age relationship between malfunctions and man-hours discussed previously, the age variables were not allowed to enter into the man-hour equation. If valid manning recommendations are to be made, they should be predicated on the number of malfunctions experienced and the mean time expended on these malfunctions, not on the adjustments the labor force must make to compensate for a shortage of personnel.

The general aircraft model is as follows:

malfunctions =   24.263
     -47.101 (age in hundreds of months)
     $+44.891$ (age in hundreds of months)^2
     $+1.739$ (flying hours)
     $+2.965$ (low-level hours)

man-hours =   7.171
     $+1.534$ (malfunctions)
     $+3.976$ (flying hours)
     $+2.159$ (low-level hours)
     $+4.483$ (B–F model dummy)

The estimated parameters are all statistically significant beyond the 99 percent level of confidence. These estimates indicate that there is a significant relationship between malfunctions and aircraft age, mission duration, and the time the aircraft spends in low-level flight. The negative coefficient on the age variable and the positive coefficient on the age-squared variable define the U-shaped failure curve.

The coefficients in the man-hour equation indicate that mission duration and low-level time influence not only the number of mal-

functions but also the severity of malfunctions. The positive coefficient for the B–F model dummy variable (1 for B–F B-52 models, 0 for G–H models) implies that more time is spent repairing malfunctions for this model group than for the G–H model group. This is probably the result of a provision for faster diagnosis and repair of failures built into the more advanced equipment of the later models. It is the benefit of experience and technology which accrues to the maintenance organization.

A marginal cost analysis based on the coefficients depicted above is presented in Table 1. The true cost figure of $4.66 was used to establish man-hour costs. These estimates indicate, for example, that if the mission length of an aircraft is increased by one hour, we can expect, on the average, to repair 1.739 more malfunctions and utilize 6.644 additional man-hours for a cost of $30.96. These linear estimates should be valid within the mission range for 4 to 12 hours. Because failure rates are nonconstant throughout mission length, the marginal costs would be higher for very short missions and lower for the longer 24-hour airborne alerts.

The cost of an additional hour of low-level for a given mission is $31.26. Since an hour of low-level is also a flying hour, this means that the total cost of a low-level hour is approximately twice that of a high-level

Table 1. General aircraft cost estimates

Mean Man-Hour Cost per Sortie = $498.00

Flying Hours

Malfunctions per flying hour	Man-hours per flying hour	Man-hour cost per flying hour
1.739	6.644	$30.96

Low-Level Hours

Malfunctions per low-level hour	Man-hours per low-level hour	Man-hour cost per low-level hour
2.965	6.707	$31.26

B–F Models

Man-hours per sortie	Man-hour cost per sortie
4.483	$20.89

Changes Effected by Age

Calendar age in years	Change in malfunctions per sortie	Change in man-hours per sortie	Change in man-hour cost per sortie
2–3	−2.420	−3.712	−$17.30
3–4	−1.127	−1.727	−8.06
4–5	.165	.253	1.18
5–6	1.459	2.238	10.43
6–7	2.751	4.220	19.67
7–8	4.044	6.203	28.91
8–9	5.337	8.187	38.15
9–10	6.631	10.172	47.40
10–11	7.923	12.154	56.64
11–12	9.215	14.136	65.87

hour for the aircraft. The benefit of technology on the newer G–H models is worth $20.89 per sortie.

The changes expected to take place in the three criterion variables as the aircraft ages from 2 to 12 years are listed in the bottom portion of the table. Costs decrease until the minimum point on the age curve is reached and then begin to increase at an accelerating rate. Between 5 and 6 years, a year of age costs $10.43, whereas between 9 and 10 years it costs $47.40, an increase of almost 400 percent.

Models were also estimated in the original study for six common aircraft systems—airframe, landing gear, flight controls, power plant, pneudraulics, and fuel—and all showed characteristics similar to the general aircraft model presented here.

Based on this model, three reallocation schemes are now being evaluated by the Strategic Air Command. The purpose of these reallocations is to have the same number of man-hours expended per malfunction in all SAC units, a procedure which will straighten out the bow-shaped man-hour-per-malfunction curve at its mean. Such reallocations should go a long way toward distributing the maintenance workload more equitably among our total maintenance force.

If this is accomplished, we might expect retention rates in units having aircraft in the higher-failure age bracket to improve, with little loss in other units. In fact, since it is probably detrimental to morale to underwork as well as overwork personnel, we may even find an increase in retention in these units. This, of course, depends on where the optimal workload lies.

Reallocation of maintenance personnel. Any reallocation of maintenance personnel between units should be done on the basis of an aircraft system or work center. Here only a hypothetical allocation using the general aircraft model will be presented. The technique, however, can be used at any organizational level.

The figures below indicate the number of additional mechanics needed at each aircraft fleet age above the minimum defined by the

age curve. These figures were derived from the man-hour estimates of the general model and are based on the assumption that each unit flies 100 sorties a month and the command has as its long-run objective a 172-work-hour month for its mechanics.

Mean aircraft age in years	Additional mechanics required
2	3.16
3	1.00
4	—
5	—
6	1.30
7	3.75
8	7.35
9	12.11
10	18.01
11	25.16
12	33.39
B–F models	2.60

Let us now say that we have 30 active strategic wings possessing aircraft fleets with mean ages from 5 to 10 years. These units participate in identical operations; the only significant difference between the units is the model and age of the aircraft assigned to them. In the case of SAC, this appears to be a fairly valid assumption.

To simplify the presentation, let us also assume that five units each possess aircraft fleets with mean ages of 5, 6, 7, 8, 9, and 10 years. We further assume that the 5- and 6-year-old aircraft are G and H models.

We now desire to allocate a total maintenance labor force, L, among the 30 active units. Let x equal the number that should be allocated to the units possessing 5-year-old aircraft. The above figures can be used to calculate the number that should be assigned to each unit:

Age and model	Number to be assigned
5 years, G–H models	x
6 years, G–H models	$x + 1.30$
7 years, B–F models	$x + 3.75 + 2.60$
8 years, B–F models	$x + 7.35 + 2.60$
9 years, B–F models	$x + 12.11 + 2.60$
10 years, B–F models	$x + 18.01 + 2.60$

The following equation is then specified:

$$L = 5x + 5(x + 1.30) + 5(x + 6.35)$$
$$+ 5(x + 9.95) + 5(x + 14.71)$$
$$+ 5(x + 20.61)$$

Solving this equation for x gives the number of personnel to be assigned to each unit.

This, of course, is a simplified example of the method that could be employed. If the objective of a 172-hour month cannot be met or a different number of sorties is flown, the figures must be adjusted accordingly.

Although these figures are based only on repair maintenance, they would probably also serve as a good basis for allocating supervisory and general service maintenance personnel, especially if all units possess an approximately equal number of aircraft. Boeing studies, for instance, show that general support maintenance runs approximately 20 percent higher than repair maintenance on G-model aircraft. Some adjustment, however, would probably be necessary for the five double wings. More than likely, these larger units experience some economies of scale in both supervision and general maintenance.

There are probably additional factors that one would wish to incorporate in the allocation formula given above. Although these factors may complicate the calculations somewhat, they would not invalidate the principle upon which an equitable allocation of personnel is based. Once the failure rate differentials are established, an efficient allocation of personnel becomes a relatively simple matter.

Reallocation of flying activity. Rather than reallocate the maintenance force, we might differentiate between the flying activity of various SAC units. The recursive model can again be used for this purpose. Since, however, this model was predicated on individual flights, some adjustments are necessary before it can be utilized to estimate the man-hours required to support an aggregate number of sorties. The required computations follow:

(1) Substitute the malfunction equation into the man-hour equation.

$$\text{man-hours} = \hat{\alpha}_2 + \hat{\gamma}_2 \left(\hat{\alpha}_1 + \sum_1^n \hat{\beta}_{1i} X_i \right)$$
$$+ \sum_1^n \hat{\beta}_{2i} X_i$$

The symbol $\wedge$ indicates that the estimated values of these parameters are used.

(2) Since the original model is predicated on an individual flight basis, all constants in the combined equation must be multiplied by the number of sorties to be flown.

(3) The coefficients of the status variables —age, age-squared, and the B–F model dummy —are also predicated on the individual flights and must be multiplied by the number of sorties to be flown.

(4) Since the flying hour and low-level hour variables are linear and additive, the total number of hours to be expended in these activities for the given time period can be utilized. The resulting equation is presented below:

$$\text{man-hours} = [44.39$$
$$- 72.253 \, (\text{age in hundreds of months})$$
$$+ 68.863 \, (\text{age in hundreds of months})^2$$
$$+ 4.483 \, (\text{B–F model dummy})]$$
$$\text{sorties}$$
$$+ 6.644 \, (\text{total flying hours})$$
$$+ 6.707 \, (\text{total low-level hours})$$

The term in brackets contains the status variables which are fixed in the short run. Since there is little variance in the age of the aircraft possessed by any unit, the mean age of the unit fleet might be utilized for the age variables with little loss in accuracy. Given the value of these status variables, the number of man-hours required then becomes a function of the number of sorties, total flying hours, and total low-level hours. When the values of these policy variables have been determined, the total number of repair man-hours to support the fleet can be calculated.

If we also assume that the Boeing findings on support man-hours for the G-model aircraft hold true for the other models, the total direct man-hour requirement may be stated as follows:

$$\text{total direct man-hours} = 2.2 \times \text{repair man-hours}$$

If the total number of available man-hours cannot support the flying schedule, some adjustment will be necessary to the proposed number of sorties, flying hours, or low-level hours. The marginal contributions of each of these variables to required man-hours are depicted by the coefficients in the above equation.

One word of caution is necessary if the above allocation scheme is adopted. Obviously the units with older aircraft will be unable to generate the number of sorties generated by units with newer aircraft. If the requirement to generate three sorties per month for each combat crew remains in effect, this scheme may require the reallocation of some combat crews to units with newer aircraft. The essential difference between this allocation proposal and the first one then becomes whether we reallocate aircrews or maintenance personnel.

Reallocation of aircraft. Under this proposal we could allocate the total aircraft fleet among the bases so that the mean age of each unit's fleet is approximately the same. This type of allocation would be comparatively simple compared to the first two proposals, but it could have one serious drawback: any labor cost savings derived from this scheme must be considered in light of possible cost increases in the inventory of spare parts. Total savings would be sensitive to the degree of commonality that exists in the demand for system spares for the various B-52 models. Additional study would be required to determine the inventory effects of this proposal.

A further consideration is that morale may improve as crew members and maintenance personnel are given the opportunity to fly and maintain the newer equipment. But against this benefit we must weigh the increased burden of maintaining proficiency in more than one model aircraft. As can be seen, this proposal has far-ranging implications that must be studied in some detail before a definite recommendation could be justified.

## A Change in Maintenance Philosophy

As a final suggestion, the Air Force may find it beneficial to alter its basic maintenance philosophy to conform more with the maintenance practices of the commercial airlines. Members of the Maintenance Engineering Directorate of the Air Force Logistics Command report that repair maintenance in the commercial sector is much more capital-intensive than in the military sector. For example, rather than utilizing labor time at the aircraft to determine which component of a system is malfunctioning, the whole bank of components is removed and replaced immediately, so that ground time is held to a minimum.

This procedure can have the effect of prolonging the minimum failure age of the aircraft as older parts are replaced by newer ones more frequently. As an example, studies by Professor John R. Meyer of Harvard University in the commercial sector have shown that the failure rate reaches a minimum at approximately the same aircraft age, 4.5 years, as in the military sector; however, after that point the failure rate remains approximately constant, turning upward again only after an aircraft age of seven years has been experienced.

In addition to this advantage we might also consider the effect of capital-intensive repairs on the number of maintenance actions taken on military aircraft. It has been shown that approximately 20 percent of maintenance actions result from improper diagnosis and repair of past failures. As capital-intensive repairs are substituted for labor-intensive repairs, we might certainly expect a decline in the number of maintenance actions that can be accredited to ineffective past maintenance. As capital is substituted for labor, the margin of error will decrease. The airlines have found the Aircraft Integrated Data System (AIDS) useful in this respect.

True, the procedure recommended here

Air Force maintenance personnel repairing a B-52 wing flap and others manning the maintenance control center are typical of the expensive skilled labor now lavished on the upkeep of military aircraft, which may call ultimately for a major overhaul of Air Force maintenance philosophy.
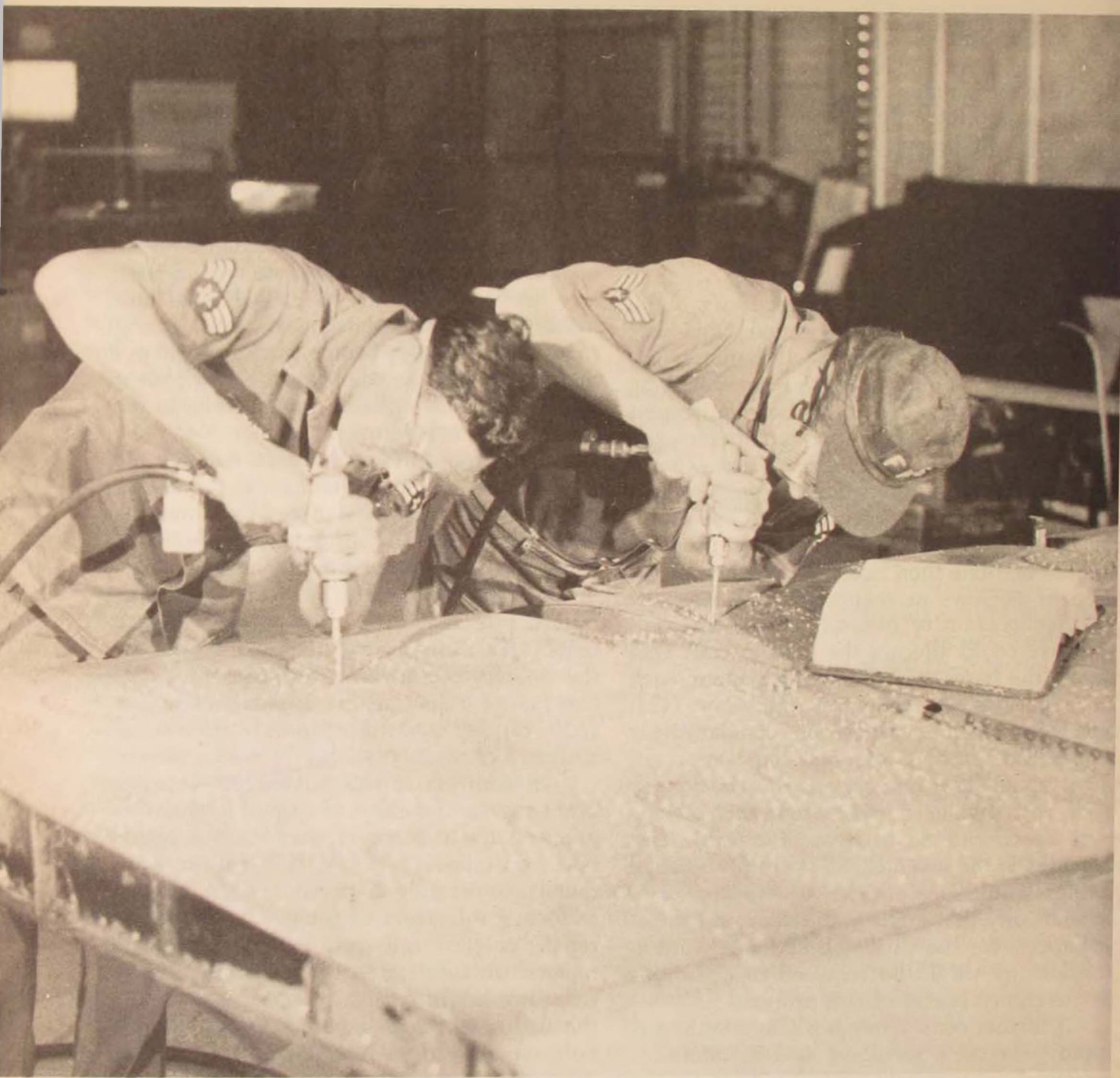
will call for an increase in the capital cost of the maintenance operation. But the increase in capital cost may well be overshadowed by the savings in labor cost. There is good reason for believing this may be true. The history of industrialization under the competitive market system is dominated by the substitution of capital for increasingly expensive labor.

The commercial airlines are subject to dictates of the market mechanism. How airline services are to be produced is determined by the competition of different producers. The method that is cheapest at any one time, because of both physical efficiency and cost efficiency, will replace the more costly method. The efficient thrive while the inefficient are eliminated. Competition forces the airlines

to utilize the most efficient methods, and they have found capital-intensive maintenance to be the least costly method of repairing aircraft.

We might also find this true in the military sector. Military labor is expensive; it is not a free economic good that sits on the shelf with no alternative use. It is now a scarce item and it has good alternatives. The true cost of retaining and utilizing labor in the military is higher than we would like to believe.

But this is not the whole story. Basic economic theory tells us that as the cost of one input increases relative to that of another or its productivity decreases, the other relatively cheaper or more productive input should be substituted for it. The productivity of our labor force has decreased relative to capital

as skilled mechanics leave the service. This alone gives us justification for seeking a new optimal method for producing maintenance services; but we have an additional reason for seeking a new optimal—the relative cost changes in labor and capital.

A cursory feel for these cost changes can be obtained from only the actual pay increases for enlisted personnel in the last few years. Table 2 shows the increases in only base pay

of service, is greater than the increase in the cost of capital.

As a basis of comparison, earnings in the civilian labor market have risen at a rate of six percent per annum since 1965. Due to a small increase in productivity, unit labor costs have risen five percent per annum. This increase is still much higher than the increase in the cost of capital, showing why industry is continually searching for more capital-

Table 2. Relative cost increases for labor and capital

Air Force Wage Increases, 1960–1968, Base and Quarters

	Airman (less than 2 years)	A1C (over 2 years)	Sgt (4 years)	SSgt (6 years)
Total increase	27.6%	43.5%	46.6%	49.8%
Average per year	3.5%	5.5%	5.8%	6.2%
Compounded yearly	3.1%	4.7%	4.9%	5.2%

Interest Rate Increase, 1960–1968, on Long-Term Treasury Bonds

Total increase	25.0%
Average per year	3.1%
Compounded yearly	2.8%

and quarters allowances for four enlisted grades from 1960 to 1968. In addition, the change in the interest rate on long-term Treasury bonds—the real cost of capital—is also given for this period. As can readily be seen, the increase in pay for the three top grades overshadows the increase in the interest rate by almost a factor of two. Even the increase in pay for the airman, who is not very productive during his initial two years

intensive methods to produce goods and services.

We therefore have not one but two reasons for believing that a re-evaluation of our maintenance philosophy—and perhaps our whole Air Force policy for utilizing labor—is needed. The substitution of capital for labor might well result in considerable savings for the Air Force.

United States Air Force Academy

A
CASE
FOR
CONTINUITY

CAPTAIN ANGELO J. CERCHIONE

NEAR the perimeter fence of a United States Air Force base in England stands a church that dates back to the Middle Ages. Although it has been virtually unused since its congregation was cut down by the Black Death in the fourteenth century, the villagers still hold Rogation Day services there every May. These many hundreds of years the British people in the area have managed to keep alive an old tradition. They are truly a people who know the uses of continuity.

While the British understand its importance, the Air Force information officer is very often oblivious to the lack of continuity in his professional life. This element upon which growth and progress are based is denied to the one who must work with social organizations that have known a long and uninterrupted development.

This is never more apparent than at the beginning of a new assignment, for an incoming information officer does not enjoy a sufficient period of overlap with his predecessor. This, compounded usually with a lack of written records, may mean that he must restart the whole process of developing an information program for his new unit. While the community beyond the base perimeter enjoys a long historical development, sometimes reaching back hundreds of years, the information officer is the newest baby on the block. When it comes time

for him to be reassigned, he will be three years old and at the height of his powers.

This dilemma is not restricted to United States Air Force personnel alone. Some years ago industry became aware of the problem. In May 1961 the Opinion Research Corporation published a provocative study entitled, "Who Are the Real Community Leaders?"[1] At one point the discussion focuses on the failure of managers of large plants to establish any real sense of community involvement. The civic leaders who were surveyed cited the lack of continuity of management as one of the prime reasons for the breakdown of effective contact with adjacent communities. The high rate of turnover at the management level prevented top executives from bridging the gap between plant and community.

The Air Force is affected by the turnover problem as much as if not more than industry. The USAF situation is aggravated by the fact that the world is its beat and that more than 50 percent of its officers do not remain for a career. With over 200 major installations located around the world and faced with a constant recruiting challenge, the Air Force has to work as hard as any government or industry to maintain continuity.

Anthropologists and historians wax poetic about the virtues of continuity. Remember, they say, man's ability to bring a culture to its highest flower was limited so long as man was restricted to only verbal communication. With the advent of writing and the consequent ability to preserve knowledge came the possibility of doubling and redoubling the life experience of the individual. This was an important advance, for mankind, like large companies, governments, and armed services, faces a high turnover each year. People die, but others pick up their tools, philosophies, and cultural patterns and carry on. Through his penchant for recording information, man strengthened his feeble hold on his world and became a broker in ideas. Since the day he discovered that he could illuminate tomorrow with a book, he was freed from the task of carrying burning coals from camp site to camp site. A book enables a philosopher to cut down a tyrant with a truth that was launched two millenniums ago. Continuity makes it possible to have Aristotle on the team.

Strange, then, that the very agency that directs the historical function seems to be the one least impressed with the recorded word. Nor does it end there. It seems almost as though the written word—except for the daily news release—is held in disrepute.

It is not enough that the public information practitioner be concerned with meeting only the exigencies of the moment. To bring an information program to maturity requires techniques that will insure the maintenance of continuity. Some of these techniques, which will be touched upon in this article, are the use of content analysis to heighten objectivity and provide perspective, the development of historical records to preserve important information, and the initiation of studies that will afford the information officer and his commander a glimpse into the future.

Some years ago, an information officer with an irrepressible sense of humor had a name plate made which read, "Captain John Blank, Dealer in Intangibles." Perhaps the information officer does deal in intangibles,

The inconvenience of large American automobiles on narrow English country lanes and village streets received bad local press until offset by an adequate flow of newsworthy information from U.S. bases to the British newspapers.

but it is more correct to think of him as one who must work with a host of small details. At work he resembles a baleen whale feeding on plankton. A mountain of unrelated items must be digested if any sense is to be made of them. But to bring meaning out of minutiae is difficult if the proper tools with which to analyze raw data are not at hand. Often a multitude of unsorted details dulls understanding and leads to the snapping of the mental thread linking events.

Examples of this kind of continuity loss can be found at many Air Force bases. An interesting series of problems stemming from this type of breakdown occurred at an Air Force base in England.

In 1964, the departing information officer had been gone a week when a replacement came from a nearby base to fill the vacant slot temporarily. After seven weeks on temporary duty status, permanent change of station orders were issued to him, and the transfer was completed in the eighth week.

The new man found little written information available about the local community. Talks with a number of the officers revealed no real knowledge of the community structure. Some of them had British friends, but on the whole there were very few hard facts available. The unit history was mute on the subject of "community relations." Fortunately, the RAF Liaison Officer was familiar with the area and was very helpful. And so it went.

Each day, the information staff would spend upwards of two hours reading newspapers from the local towns and villages. In all, two daily papers and four weeklies were scanned for news items of importance to the base. The clippings were then circulated among key officers in the unit. During the first six months that the information officer had been monitoring the clipping files, he had noticed "a lot of bad press." His curiosity aroused, he conducted a content analysis of the six local newspapers (all of which were owned by one company), stretching back over the whole of 1964.

Categorizing the articles as either adverse or favorable publicity, he was able to develop the general pattern of USAF news to which the

local British residents had been exposed. The analysis proved to be a shock. Fully 31 percent of everything published about the base fell into the adverse category (approximately 5 percent is average for a base enjoying good relations). Almost one in every three stories fell into one of five adverse publicity subcategories: aircraft accidents, automobile violations, public disturbances, aircraft noise, and miscellaneous misadventures. Over 60 percent of the adverse material was devoted to automobile violations. Oddly enough, the Americans had hardly any more accidents on the average than the British populace. Somehow the American motorist had caught the eye of the British press.

At this point, a decision had to be made: Was the adverse publicity the outgrowth of anti-American sentiments, or should an alternative answer be sought? It was decided to hold the anti-Americanism hypothesis in abeyance until the staff could examine its own efforts in telling the Air Force story to the British community.

Out of the clippings three major types of stories emerged: Anglo-American marriages, automobile accidents, and airman job proficiency. Of these only the last was written and released by the information office staff for both the local press and the military media. Marriages and accidents were picked up by the local British reporters.

An information office staff member raised the question whether it were possible that a news-hungry press turned to the marriage and automobile accident stories as a last resort. In the absence of a variety of positive news releases being generated by the information staff, were the local newspapers covering the churches and courts for usable material?

The answer that this was indeed the case was a difficult one to accept, for it pointed the finger of blame directly at the information office. That office should have recognized that it was not telling the story of the USAF in sufficient detail. The vacuum that was allowed to develop drove the local press to pick up whatever was available. What was available was poor.

The direct outcome was that the local

newspapers unconsciously were being forced to project a picture of the American as a man of narrow interests: good with his weapons, a caution in an automobile, and apt to become one's son-in-law. No less had been done for Genghis Khan and his horde seven hundred years earlier.

The local residents had a right to discover via their newspapers that the Americans in their midst were something more than two-dimensional mercenaries. During the next two years the overall output was increased, and a variety of stories was planned to eradicate the image that had grown up over time. In 1964, the year of the content analysis, 298 articles were published; in 1965, 369; in 1966, 461.

By continuing the content analysis, the information office could measure the effect that this change of policy was having on the local newspapers. During the three years that the content analysis was conducted, a 253 percent increase in favorable coverage was logged: 1964, 1733 column inches; in 1965, 2753 inches; in 1966, 4389 inches. At the same time the adverse news began a slow retreat: 1964, 767 inches (of which 453 were attributed to automobile violations); 1965, 619 inches (401 autos); 1966, 398 inches (246).

(Several British civilians offered reasons why the automobile accident stories were popular or at least were receiving an inordinate amount of press attention. The local populace had been sensitized to the appearance of the large American car on their narrow country lanes. It tended to be painted a bit brighter than the staid little British cars; its steering wheel was located on the wrong side of the vehicle; and it was driven by a man who had learned to drive on the wrong side of the road. To the British press, in the absence of any other news, it was a godsend.)

In the following two years (1965 and 1966), other items were to be fished out by the content-analysis seine. Some of these were minor headaches but are illustrative of the kinds of basic problems that must be dealt with when records do not exist.

At one end of the base's active runway was a town whose history went back over a thousand years. Today, many of its residents find employment at the base. The town was only seven miles from the airdrome, and a large number of American families had settled there. Relations were good, and yet the local weekly newspaper carried very few news items about the base and its British and American work force.

Again, the information staff looked to its own system first. All the Air Force news releases were sent to the newspaper company's consolidated newsroom, and its internal distribution system took care of getting them to the editors in the outlying communities. The editor of the weekly, who was very partial to Americans, when queried said that he never saw many of the Air Force releases. Somewhere that copy was being sidetracked. The information staff decided to switch to a direct mail system to reach the editor.

The content analysis for 1966 dramatically traces the improvement that the new system brought about. After two quiet years during which the paper carried approximately 200 column inches each year, the third year saw 1080 inches in print.

Direct mail! Think how primitive a development that is. The base in question had been in that country for 15 years, and in that time someone should have discovered that the newspaper's central newsroom was used to handling "the big news" and had a tendency to ignore the needs of their own weekly editors. A permanent record of some kind would have precluded the new information officer's having to start from scratch.

In the area of records keeping an interesting paradox is encountered. The maintenance of semiannual histories has been the lot of information officers for some time. One would tend to expect that association with this function over a period of time had developed in information officers a high regard for its worth and, more important, that it would have stimulated an intellectual acceptance of the whole idea of recording significant human activities. But an examination of almost all semiannual histories will reveal that nothing has been entered in the section reserved for the wing/base information office. The implication is that perhaps nothing significant

has occurred. Nothing could be further from the truth, but the absence of permanent record creates serious handicaps for newly assigned military executives. A system that replaces its personnel sequentially every two to three years cannot afford to have blank pages in its unit histories. Between the rotation system and lack of historical records, the information officer virtually is condemned to remain a two- or three-year-old when dealing with a community that dates back beyond the time of his assignment.

This is not a fussy mind fretting over "the small stuff" that everyone hates to sweat. Such omissions and sloppy methods can and do hurt Air Force people. A case in point occurred at the same Air Force base in England.

In 1964, the agencies concerned with the welfare of American families living in British communities were registering a vague complaint from the wives of servicemen living in isolated villages. Approximately 1100 families lived in the larger towns, but some 700 families had to find "digs" in the smaller villages. These accommodations were as far as 30 miles from the base, with very poor bus service between the base and neighboring towns and villages. During the day, the husband usually drove to work in the family car, leaving his wife alone at home in a strange community. It took over a year to identify the problem: the women were experiencing culture shock.

Thanks to a very perceptive Community Relations Advisor (these are British women who are assigned to each base by the Ministry of Defence to assist Americans in getting the most out of their cross-cultural adventure), an Anglo-American welcome wagon program was organized. In the larger communities, American women who had made the adjustment to their new environment could be counted on to contact the newly arrived family and see to their comfort. In the villages, however, very often there were no other American families. There, a British women's service organization, the Women's Institute, was called upon to welcome the new arrivals. The system proved to be very effective.

Recently a reprint of an interesting paper turned up at a college lecture. It was entitled

"Culture Shock" and had been circulated to all our bases in Europe in October 1960. The author described the symptoms, then said:

> I think culture shock affects wives more than husbands. The husband has his professional duties to occupy him and his activities may not differ too much from what he has been accustomed to. The wife, on the other hand, has to operate in an environment which differs much more from the surroundings in which she grew up, consequently the strain on her is greater.

Five years after the publication of that paper, an entire unit stumbled toward a solution. While the base was struggling to determine the problem and its cure, over a thousand families had moved into and out of the villages surrounding the American enclave. The cost in misery and maladjustment could have been lessened had a system existed for storing and sharing important information.

The preservation of meaningful information and the periodic analysis of the day-to-day operation are important to the maintenance of continuity, but these steps are by no means the only ones that should be taken. Increasingly, public relations practitioners are

Community Relations Advisors, assigned by the British Ministry of Defence, are a boon to American personnel.

Royal Navy cadets from HMS Ganges, *near Ipswich, see USAF radar on a tour of RAF Bentwaters base.*

becoming aware of the need for long-range planning. In the May 1968 issue of *Public Relations Journal*, John Hill, chairman of Hill and Knowlton, discusses this very point:

> The daily pressures are such that the pragmatic approach to public relations, the urgency to achieve immediate results and solutions, inevitably dominates our activities. But more and more our work is also concerned with the longer view involving areas which would have seemed wholly academic a few years ago. It is my opinion that large firms like ours are increasingly going to need to be better grounded in such fields as the political, social and behavioral sciences if we are to be able to deal with the complex problems of today and tomorrow. There is a gap between these areas and the purely pragmatic aspect of public relations which needs to be bridged.

What form should this planning take? A study now in progress will serve as an example of the kind of long-range planning that commanders and their staffs will find vital in the next five or ten years.

Perhaps a line taken from a wildlife conservationist's handbook might serve to introduce the study in question. Birds, they say, are free to fly almost anywhere but find that roosting places are becoming scarce. Where

man roosts, birds do not. The same might be said of aircraft. Air Force bases have traditionally been located in fairly remote areas, but as population figures continue to climb, communities everywhere are burgeoning. What may have been a small and remote base 20 or 30 years ago is today a $300 or $400 million installation with a spectacular suburban or urban growth going on all around its perimeter. As the urban matrix constricts, the flying mission may be threatened.

The urban encroachment study now being conducted by two wing information officers is being carried out in a state where 87 percent of the airspace is used primarily by military aircraft from three major USAF bases. At the present time there are no community relations problems, and the base still enjoys a certain isolation. Its nearest neighbor is a town of 1500, one mile to the south.

There are, however, several factors that may alter the picture. Fifteen miles to the east is a major community which in the past 17 years has grown from 100,000 to 525,000 people. By 1975 this city will shelter almost a million inhabitants. Newcomers will find that the land surrounding the base is one of the few areas left for home sites. In fact, the small towns bordering the base are well aware that

Urban
Encroachment

Conservative estimates put the population of the 12 communities in the urban encroachment study at 1.7 million in 1985 (up from 600,000 in 1969). Town boundaries by then will have jumped from 301 to 530 square miles. In the future, aircraft using the base N will disturb residents in communities D and M, and a growing fleet at airport L will share airspace with jet fighters from the base. Joint planning can alleviate these problems and extend the useful lifetime of the base for years.
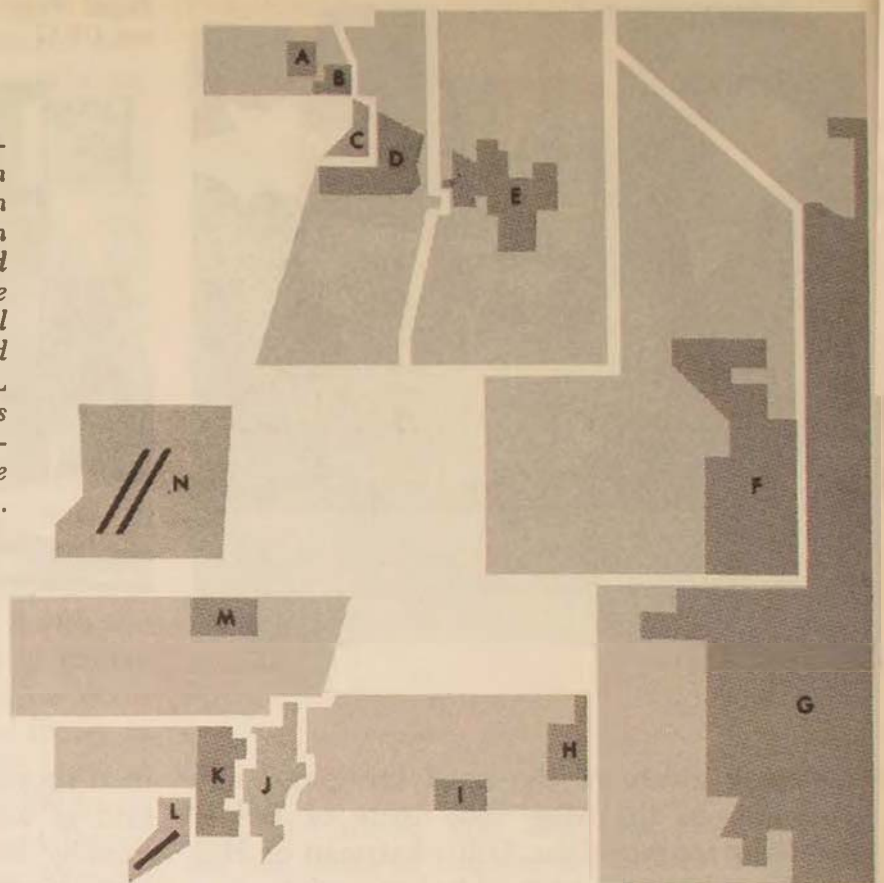
they are facing a period of unprecedented growth. Each of them has commissioned special studies designed to serve as blueprints for community development.

By obtaining copies of these studies, the information officers have been able to map the changes in population density and residential area boundaries that will have an effect on the base mission. Three major areas of concern have emerged: the small town of 1500, one mile to the south, will jump in population to 100,000 by 1985; a retirement community of 11,500 located five miles to the northeast will jump to 50,000 by the 1980s; and a small airport six miles from the end of the runway has been designated to serve as a satellite airport for the metropolis to the east (it will not only handle freight and passengers but will also have as tenant a large school for light aircraft pilots). (See map.)

The intent of the information staff in conducting a study of its own is not to try to hinder the growth of the communities around it. Their purpose is to lay a foundation for a community relations program that will begin to pay off during the next twenty years. In general, their study will help them in determining whether base/community councils should be formed, who should serve on them, and what problems will require special cooperation to avoid conflict. Perhaps those involved in the study will find that at some future date the needs of the community will overshadow those of their base, but at least they have taken a step which will enable them to chart a sensible course for their commander. If the work is accomplished with care and skill, future information officers and commanders also should benefit, to say nothing of the mission.

IF IT WERE feasible to start work on the best of all possible information worlds, one could strongly advocate several steps.

First, personnel policies should be modified to ensure that there will be sufficient overlap between the arrival of the new information officer and the departure of the old. This would keep a strong hand on the helm until the replacement had a chance to meet community leaders, news media representatives, and other key people. A two-month overlap would provide the new man with a fruitful period of apprenticeship.

An important second step would be to employ a greater variety of techniques such as content analysis. While these do not replace the subjective interpretations of the information officer, they do aid him in gaining an appreciation of problems not amenable to subjective analysis. Content analysis has one further feature: it is recorded information and as such is capable of being transmitted to a successor.

In several of our case histories, the incoming information officer had to begin from scratch. A third step that would eliminate a great deal of this kind of wheel spinning is a re-examination of the semiannual history as it is used by the information office. What is lacking in the historical program is a solid requirement for the inclusion of a carefully structured analysis of the local community. (Here is where content analysis of the local newspapers would find a home; here, too, would be the place for the introduction of special problems that had been encountered and their solutions. This would keep information specialists from having to rediscover culture shock and direct mail systems over and over again.) A carefully conceived study of the local community should be more than a collection of odds and ends. It should be a systematic approach, and a modified model might easily be borrowed from one of the social sciences.

"But look at the community relations reports we are writing now!" some would cry. True, but these could be altered to fit a more scientifically designed model. If properly done, a single report could be developed that would satisfy both requirements. Including the report in a unit's semiannual history would ensure its preservation and continuity.

Finally, as Mr. Hill suggests, some of the information officer's daily energy should be spent in attempting to learn more of what the future holds for his organization. The alternative is to catapult the unit into a situation over which its leaders have no influence or understanding.

The techniques mentioned here can evolve a fuller awareness of the importance of the past, present, and future to a community relations program. No longer is it possible to regard the interior life of the citadel as of paramount and overriding importance; efforts must be made to discover the pulse of the community beyond the perimeter fence. Each information officer in the course of his work attempts this very thing, but many fail to leave evidence of their good work behind for later appraisal and use. There can be no doubt that collectively information officers are producing pearls; the cry for continuity here is in the main a search for a means of stringing the pearls together. For, as with most pieces of fine jewelry, it is the excellence of design which imparts a value that exceeds the cost of the individual gems.

Luke Air Force Base, Arizona

Notes

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BEHOLD
THAT
TIGER

THE VERTICAL TAKEOFF
AND
LANDING OPTION

LONEL RICHARD S. MORRISON, USAF (Ret)

THE ability to take off and land ver tically has been, until recently, the unique forte of the helicopter. Because of this ability, the helicopter has been able to establish its own domain of operation withou competition from conventional aircraft.

Helicopter enthusiasts have long tried to extend the radius, speed, and payload capa bilities of their craft to approach the per formance of conventional aircraft. But for a even longer time, fixed-wing enthusiasts hav sought to add a capability for taking off an landing vertically or in very short distance.

Although these desires are generally ap plicable to air vehicles used in both comba and transport roles, the keener interest an the larger portion of the effort have bee devoted to the combat role; i.e., helicopt gunships and tactical fighter aircraft. A ho of developments gives able testimony to th effort. Among the better-known developmen are catapult and arresting gear on aircra carriers, Marine Corps short airfield for ta tical support (SATS), zero-length launch d

vice (ZEL) for fighter aircraft, jet-assisted takeoff (JATO), runway landing arresting gear, armed helicopter, and compound helicopter.

The vertical and short takeoff and landing (V/STOL) fighter has been made possible by some 15 years of study and research and development effort, here and abroad, to bridge the gulf between the helicopter and the conventional fighter.

Several countries have produced and tested experimental V/STOL vehicles, and in 1967 the British ordered a number of Hawker-Siddeley Harriers (a follow-on to their experimental Kestrel, P.1127) for operational use in the Royal Air Force. The Soviets exhibited a V/STOL fighter at the Domodedovo air show in July 1967. Since 1964 the United States and the Federal Republic of Germany have been working together to design a prototype V/STOL fighter. The discontinuation of this effort was announced in February 1968,[1] leaving the future of U.S. V/STOL fighter efforts somewhat uncertain.

The V/STOL fighter consideration must remain active in view of recent experiences in air warfare. In June 1967 the Israeli Air Force successfully executed surprise runway interdiction attacks against Egyptian air bases. Immediately after cratering a runway, the attacking aircraft made additional passes and destroyed the aircraft stranded on the ground.[2] This warning that runway-dependent aircraft on the ground are vulnerable to a surprise attack takes on added significance if munitions for runway interdiction are dramatically improved in future years and improvement in runway rapid-repair capability lags.

V/STOL—a solution to many problems

When carrying a heavy payload, V/STOL has an advantage over similarly loaded conventional fighters because of its ability to take off with a much shorter ground roll. However, the V/STOL's really significant difference from other fighters is that it can take off vertically with a useful combination of fuel and ordnance and can land in the same fashion.

The tactical significance of this option in both land-based and carrier-based operations has not been fully appreciated by some planners and decision-makers, with the result that a firm requirement for the V/STOL fighter in our general-purpose forces has not yet been recognized by the appropriate authority.

One of the real obstacles to objective thinking is, perhaps, the artificial barrier in the minds of many who associate V/STOL with a dispersed basing posture fraught with difficult problems of maintenance, housekeeping, logistic support, command and control, and security. Certainly, dispersed basing is more costly and more difficult than main base operation; but who would go to dispersed basing if the only result would be increased expense and difficulty?

In recent years we have discovered that these same general problems, long associated with helicopter operations, are not so formidable. We have learned to appreciate the significance of the helicopter's austere-site capability as well as the lack of this capability in fixed-wing aircraft. Insistence that all maintenance and logistic support be provided at main bases would have prevented realization of the tactical advantages offered by helicopters.

The highly successful operation of the helicopter in modern warfare is obviously due to the high utility of its unique takeoff and landing capability in the face of at least some support penalties not erased by ingenuity and experience.

Because the V/STOL fighter also possesses the ever available VTOL option and because its in-the-air performance is comparable to that of conventional takeoff and landing (CTOL) aircraft (and is much superior to that of helicopters), an even greater bonanza in tactical utility undoubtedly can be realized from it. Certainly, the operation of any aircraft requires a main base of support somewhere; however, the aircraft need not return to the main base after each sortie or even after each day or each week. A better appreciation of the tactical significance of the VTOL and STOL options in aircraft with CTOL-fighter performance in the air will encourage realistic solutions for problems such as those associated with dispersed basing.

Because of the requirement for long paved runways or special launching and arresting gear for short surfaces, the basing flexibility of our current CTOL tactical fighters is subject to several limitations:

(1) CTOL fighter operations are impossible or severely restricted in many areas of the world because of the scarcity of paved runways or their limited length or load capacity.

(2) If the enemy achieves a capability to mount an effective runway interdiction campaign, our CTOL force may be denied the opportunity to operate.

(3) The enemy can find our CTOL fighters on the ground at our relatively few bases, since he already knows their locations. The posture thus presented to an enemy first-strike attack is unacceptable in a nonnuclear environment and suicidal in a nuclear environment.

(4) The U.S. Air Force cannot base CTOL fighters with or near the Army units they support in the close air support role.

(5) Since the retreating enemy will undoubtedly attempt to destroy airfields, CTOL fighters can be moved to capture bases as the battle line moves forward only after extensive construction has been accomplished.

Simply stated, the essential basic advantage enjoyed by V/STOL over CTOL fighters is that of greatly enhanced flexibility in basing options. Basing flexibility can have an appreciable effect on operational effectiveness, survivability, and reaction time from ground alert. Entirely new possibilities exist for exploiting V/STOL, such as the use of floating landing pads, the reconfiguration of aircraft carriers, and the elimination of landing gear and its associated weight penalties.

V/STOL advantages in deployment and basing flexibility

To carry out our country's responsibilities to other nations, our fighters may be required on short notice in any part of the Free World. Many areas, particularly those of the less developed nations, lie in hot regions, and many of the existing paved airfield facilities are at high elevations. Consequently, high-tempera-

ture conditions coupled with altitude and runway-length factors seriously limit the payload-radius capability of our fighters in many locations. Under the same conditions, V/STOL could still operate with a full load from the runway lengths available.

Another problem is that many of the runways are too weak to sustain the operation of some of our fighters without extensive damage to the paved surface. Again, the advantage is on the side of V/STOL if the operational need justifies use of weak runways. V/STOL, requiring only a short strip in the STOL mode, can operate during successive periods from different segments of a runway while repairs on another damaged segment are in progress. All the while, the VTOL capability is available as an option.

Basing fighter aircraft near the battle area produces the obvious advantages of quicker reaction and greater ordnance delivery capability and, under some conditions, eliminates the need for air loiter. Except in special instances, battles are not static. One of the major problems of a fighter force in keeping up with the movement of the conflict is the time required to prepare new sites or, in most cases, to repair and rehabilitate enemy airfields that have been overrun. V/STOL would have a marked advantage over other fighters in this situation because it could move forward and operate in the VTOL mode as soon as debris-free pad-size areas were available and then operate at full payload-radius capability in the STOL mode as soon as a fraction of the runway required for CTOL fighters was available. Unfortunately, if a future enemy fighter force were predominantly V/STOL (a goal suggested by the Domodedovo air show?) and ours were not, new bases for our conventional fighters would have to be constructed mostly from virgin sites.

If we had V/STOL fighters, the enemy would know it and would have to use tactics other than those employed against a pure CTOL force. He would know that he could not ground our V/STOL's by interdicting runways no matter how heavily he attacked. Furthermore, in his search for aircraft on the ground he would know that the search could not be

confined to areas on and immediately surrounding airfields or to other surfaces capable of serving as runways and that should he find one v/STOL, others would not necessarily be located nearby.

Until the advent of the v/STOL fighter, there had been little reason to think that basing tactical fighters with Army helicopters or light aircraft might be possible in a tactical situation. Now, however, v/STOL makes operation from small forward sites feasible. Tactical advantages of improved coordination and reaction time could be gained if Air Force and Army aircraft were operated from the same sites. It seems reasonable to anticipate that many benefits could accrue, from logistics support and security viewpoints, particularly when less than a full squadron of v/STOL's is to be operated from a forward location.

Two types of older aircraft have been modified to serve in a light attack role; however, these aircraft are capable of sharing few, if any, of the Army's light aviation sites and none of the helicopter facilities. Consideration is being given to designing and producing a new close air support (A-X) aircraft, perhaps capable of using forward operating bases. A v/STOL fighter designed for the close air support (CAS) role could operate from virtually any airfield in the world (including helicopter facilities), with the added flexibility of being able to use many other sites not built as airfields. v/STOL CAS fighters could thus provide more effective close air support because they are free from the basing restrictions of light attack aircraft and superior to the helicopter in speed, payload, and mission radius.

V/STOL advantages in dispersal capability

Since the v/STOL fighter is not runway-dependent, runway interdiction by the enemy would not be an effective tactic against v/STOL forces. While v/STOL's would have many more opportunities to disperse nearby or far from a main base than would CTOL's, CTOL fighters have the more compelling requirement to disperse away from main operating bases if runways are brought under attack. This is easier to visualize, perhaps, if one imagines the

situation that could have existed during the 1967 clash in the Middle East had the Egyptian Air Force been equipped with v/STOL fighters instead of MIG's. Even if the v/STOL fighters had been located on main bases, Israeli bombing of runways could not have grounded them for the ensuing attack. Obviously, Israeli attacks would have been made on the aircraft themselves. Since probably only a portion could have been destroyed on the first pass, the remainder would have been scrambled and saved. Thus, the VTOL capability would reduce the need to disperse, while at the same time making dispersal easier. v/STOL may be operated solely from a main base posture. It could be dispersed for greater on-the-ground survivability except when returned to base for maintenance, rearming, and refueling. Or it could be dispersed for greater survivability or more effective operations and be supported and operated from that posture. CTOL fighters do not have these options.

v/STOL fighter basing alternatives include use of a wide range of small sites not necessarily built as air facilities or having that appearance. Among the latter are strips of highway, vehicle parking lots, barges, and prepared pads or surfaces at any desired location. Besides the obvious advantage of being able to operate from such locations, perhaps an even greater advantage is improved ground survivability because of v/STOL's enhanced ability to avoid detection. Airfields, being fixed installations, can, under most conditions, be easily detected by the human eye, radar, infrared sensors, or photography. Individual aircraft on airfields are fairly easy to detect, once the airfield complex has been located. Aircraft using sites other than airfields would not be so easy to find for several reasons. First, because they would be based away from an airfield complex and could use any of a large number of candidate sites, v/STOL would have to be searched for as a randomly located target. This does not mean that v/STOL would be individually and randomly scattered over a large area. On the contrary, essentially the same benefit could be achieved by dispersing the aircraft within ten miles or so of

the supporting facilities of a main operating base, thus limiting the adverse effect upon logistic support and command and control. Second, the aircraft could be "blended" into its surroundings by making it appear to radar or infrared sensors as a truck, a metal roof, or background clutter or by allowing it to have little or no contrast and no sharp lines when viewed against the local background by visual or photographic sensors. The use of a high-flotation dolly for ground handling would permit the v/STOL to be moved to any location accessible by a route enough wider and higher than the aircraft. Thus, v/STOL could be moved away from its landing strip or pad, if necessary, to lower the chance of detection.

When an aircraft is repeatedly operated from an off-base site, telltale signs such as wheel marks or burned grass will provide clues to its position. To counter this problem, false wheel marks and burn patterns (and occasional aircraft decoys with radar reflectors imitating aircraft) could easily be scattered over a wide area in such numbers that the presence of the real signatures (unlike the presence of an airfield) would not greatly increase the chance of detection. Camouflage may also be employed to reduce detection, and of course a number of small sites would be much easier to camouflage effectively than one large operating location.

Undeniably, a fighter base of the kind used today would be an easy target for an enemy's nuclear weapons, and runway-dependent aircraft would be highly vulnerable. But the v/STOL fighter could be dispersed to the extent consistent with the threat, so that, at the extreme, each v/STOL would represent a separate aim point for the enemy. Thus, use of the VTOL option could improve survivability on the ground and increase operational effectiveness. The VTOL option, however, suggests further changes in the aircraft configuration and some unique basing and application possibilities.

omission of V/STOL landing gear

Aircraft wheels have been required on operational fighters primarily as a means of facilitating takeoff and landing, secondarily for convenience in ground handling. Consequently, their presence has not been seriously questioned. What is the trade-off if skids or other ground-contact devices are substituted for the landing gear? As a corollary, how can the large payload-radius capability be retained if the aircraft is optimized to the VTOL mode?

The thought of omitting the wheeled landing gear from fixed-wing aircraft is far from new. A number of U.S. aircraft designs did not include wheels—the Curtiss F9C-2, operated from dirigibles in the early 1930s; the McDonnell XF-85 parasite fighter, carried by the B-36; two Navy experimental VTOL aircraft, the XFV-1 and XVY-1; a hydro-ski fighter, the YF2Y-1 (Sea Dart); and the X-15, which has main skids and a nosewheel. Foreign aircraft without wheels have included two World War II German aircraft—the ME-163, a rocket-powered fighter, and the AR-234A, a four-engine jet aircraft—and the French SE 5000 (Baroudeur), a lightweight jet fighter.

If the v/STOL fighter is operated exclusively in the VTOL mode, its landing gear would be used only for ground-handling purposes. The substitution of a dolly would substantially reduce aircraft weight, complexity, and cost and would increase performance. For a fighter aircraft, the reduction of each pound in the vehicle structure weight represents a saving of some 3 or 4 pounds in takeoff gross weight to perform the same mission. Since the conventional landing gear and its associated structural strengthening represent 15 to 20 percent of the total structural weight, the elimination or substantial reduction of landing gear weight would permit increasing the fuel and ordnance load by the same amount. If the aircraft is redesigned, then a smaller aircraft could do the same job and its takeoff gross weight would be considerably less.

In addition to the improved payload-radius obtained by omitting the landing gear at least two more options are available to increase the payload-radius capability. One alternative is vertical takeoff with the ord

nance load aboard but with minimum fuel; then the aircraft would be refueled from a buddy aircraft or tanker shortly after transition to level flight. The other alternative is vertical takeoff with maximum fuel and ordnance by the use of jet-assisted takeoff units to enable takeoff. (A vertical landing is not a problem after the ordnance is expended and most of the fuel consumed.) JATO may seem an expensive solution; yet it more than pays for itself in the additional ordnance payload carried, and it would be used only when a combat situation required such additional payload. If a short takeoff strip is available, a properly designed ground-handling dolly could be used during the takeoff roll (as was done for the German ME-163 and AR-234 and the French SE 5000).

While these suggestions about landing gear have been made in the context of land-based aircraft, they are also generally applicable to v/STOL based on floating platforms, including aircraft carriers.

impact on carrier operations

The operation of conventional aircraft from carriers necessitates the use of catapults and arresting gear, with the result that both launch and recovery rates are limited by the sequential handling capacity of the installation. In addition, the aircraft are penalized by structural requirements and the associated increase in airframe weight which enable them to use such gear. In earlier days of carrier operations, technology did not permit carrier-based fighter aircraft to be designed with a sufficient thrust-to-lift ratio to provide any alternative to catapult and arresting gear. Now technology makes possible an attractive alternative that provides a release from the one-at-a-time capability.

v/STOL fighters would have the capability to take off from or land on ship deck without the aid of catapult or arresting gear. This suggests that, besides the possible elimination of the need for such gear, the launch and recovery rate could be increased (as it is with assault helicopter ships). It further suggests that v/STOL fighters might operate from float-ing platforms other than aircraft carriers. For carrier operations, since v/STOL fighters would not have to use the long axis of the flight deck for takeoff, multiple simultaneous takeoffs and landings would be possible and could accelerate carrier operations.

The Soviets have reportedly started construction of their third helicopter assault carrier, which will weigh about 23,000 to 25,000 tons fully loaded, with decks too short for fighter planes.[3] In view of the demonstration of v/STOL fighters at the Domodedovo air show, can the use of these ships as carriers for v/STOL fighters be ruled out?

self-contained sea convoy fighter escort

The possibility of eliminating launching and arresting gear aboard ships suggests fighter and antisubmarine warfare (ASW) escort for sea convoys by basing v/STOL aircraft on convoy escorts or on ships in the convoy. Among the numerous and important advantages are the following:

• v/STOL aircraft could be scattered throughout the convoy on a number of ships; thus the loss of any single ship would not greatly reduce the total air warfare capability.

• v/STOL can take off and land vertically into the relative wind; hence no ship would need to depart from convoy course during launch or recovery operations.

• Immediate fighter and ASW reaction capability could be available without disrupting the convoy formation.

• Helicopters for ASW patrolling and intraconvoy logistics could be operated from the same flight decks.

floating platforms as VTOL sites

The VTOL capability of the v/STOL fighter makes possible the use of barges or similar floating platforms in theaters where water areas are abundant and land-based operations are either difficult or undesirable. In areas where barge basing is feasible, sites could be resupplied by water or land routes as well as by air (helicopter or v/STOL transport).

Supplies could be stored below the flight deck, and the barge could be moved to various other locations. When the barge is not occupied by the aircraft, its identity as a v/STOL site could be concealed from the enemy. When an aircraft is aboard, camouflage could reduce the evidence. At all times the barges used by v/STOL could be made to look exactly like barges normally used in the area.

As an alternative to the use of barges as landing pads, a seaplane or amphibious v/STOL fighter might be feasible. Since the v/STOL hull need not be designed for the high dynamic forces encountered in conventional water takeoff and landing operations, a relatively lightweight aircraft is possible. Much smaller water areas would be adequate, and perhaps operations could be conducted in water conditions too rough for other aircraft.

Closely related to the floating pad idea is the use of the Fast Deployment Logistics (FDL) ship as a v/STOL platform in coastal waters. If the FDL concept is put to use, self-contained air protection could be provided as the FDL approaches a shoreline and later as it discharges its cargo.

other operational considerations

While the helicopter is doing a marvelous job of rescuing crew members downed fairly near friendly territory, an improved capability to rescue aircrew members downed deep in hostile territory is an urgent requirement. The v/STOL fighter offers a rapid deep-rescue capability without requiring escort.

The value of high speed for survival in penetrating to the target is universally recognized, but the delivery of ordnance during a high-speed pass suffers in accuracy. The v/STOL fighter could penetrate at high speed, and then, if advantageous for accurate ordnance delivery, it could shift to a slow-speed pass on the target by partially transitioning to the hover mode. Even if additional defense suppression effort is necessary to offset the increased vulnerability to ground fire of aircraft using this attack mode, the trade-off may still be profitable, especially for important isolated targets.

V/STOL FIGHTERS, through their ability to take off and land vertically, can enjoy a combination of the better performance capabilities of the helicopter and the fixed-wing fighter. Critical appraisals of the utility of the v/STOL fighter have usually been confined to its direct substitution for the conventional fixed-wing fighter under the constraints of the prevailing operation and logistic concepts. So it was when our Army considered and acquired its first aircraft. v/STOL fighters may, however, have much more than an incremental effect upon air operations, as did the jet fighter (the German ME-262) beginning late in World War II. Historians cite the jet fighter as the one weapon that could have restored air superiority to the Third Reich and point out the failure of Adolf Hitler to recognize its greatly improved potential soon enough for it to be produced in quantity.[4] We are again faced with the knowledge that we do not lead the world in a new area of fighter development—v/STOL. In fact, we have not yet investigated many of the implications and possible advantages associated with a v/STOL capability. Prompt action is needed to correct this situation. History may not be as forgiving to the United States in the future as it has been in the past.

Falls Church, Virginia
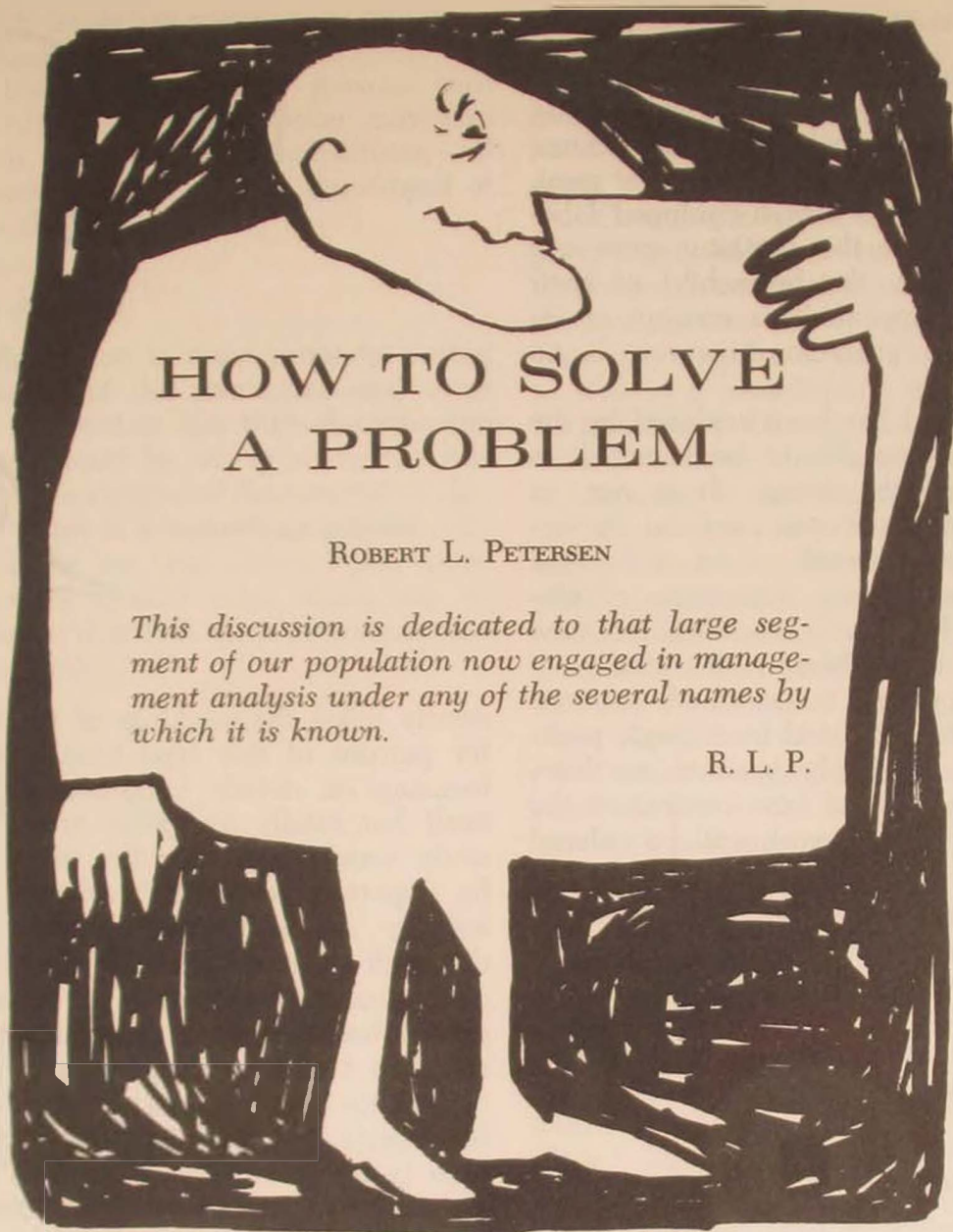
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HOW TO SOLVE A PROBLEM

Robert L. Petersen

This discussion is dedicated to that large segment of our population now engaged in management analysis under any of the several names by which it is known.

R. L. P.

THE ONRUSH of modern technology has brought about many obvious changes in the electromechanical aspects of twentieth-century living. What is not so obvious is that there has also been a concomitant—though not clearly independent—revolution in the social sciences. This revolution has fostered new points of view on the interrelationships among nations, on the prosecution of military adventures, and on such mundane exchanges as the purchase of groceries. Nowhere, however, has the impact of the new social technology been greater than in the area which is the subject of this discussion: the confrontation of man and problem.

individual vs. committee

In less sophisticated times, it was thought that problems were best solved by individuals. Thus, if one wanted to know about radium, he simply turned loose M. Curie—or at most, M. Curie and wife—in a well-equipped laboratory. Having done this, nothing more was necessary. In time, the brainchild of their erudition would appear. This concept of individual vis-à-vis problem, however, is no longer in favor.

The individual has been replaced by the committee,[1] and we should be clear as to the reasons for this change. It is not, as many think, because several men can do several times as much work as an individual. Indeed, there have been committees of fifty that scarcely did as much as a single full-time worker. And it is not because the quality of the committee product is necessarily superior to what might be produced by a single problem analyst. It is simply because we have found that regardless of how competent the individual may be, his work will be colored by his personal biases and, hence, will be satisfactory only to those few who share the same prejudices. A committee, on the other hand, involves many individuals and, therefore, covers a complete spectrum of biases. Its work is not, for this reason, satisfying only to those few who are uniquely prejudiced.[2]

selecting a committee

There are some subtleties that may escape the neophyte in the matter of selecting committee members. For example, the amateur, acting on impulse, may attempt to enlist the services of those who are recognized as being most knowledgeable in the problem area at hand. A little thought will show that this is a mistake, for people working in the same subject area are likely to suffer from similar mental quirks, which will defeat the objective of heterogeneity in viewpoint. More important, however, is the fact that the main purpose of a committee is to *manage* the study effort, not to do the studying. The infusion of only a few problem-oriented people will con-

selecting a committee

stantly upset the workings of the committee, for persons of this type usually insist upon focusing on details important to the study itself but totally irrelevant to the matter of study management. Further, they are apt to be impatient to get on with the work and entirely unsympathetic with the slow but thorough cogitations which are the hallmark of true committee process. On the other hand, it will become necessary at some point actually to do the study. So it may perhaps be diplomatic to invite a number of subject matter experts and even some workers to participate in *the* committee. They can always be assigned to some study group after the first or second meeting.[3]

To achieve the goal of heterogeneity in viewpoint, the committee proper should be composed of individuals at a fairly high level. This ensures that the primary members will often be busy at some other major problem and forced to send substitutes to the committee meetings. By the use of this simple stratagem, a committee of perhaps twenty—and hence limited to twenty opinions—may be expanded to as many as a hundred or so, with all of the attendant benefits.

Persuading high-level personnel to accept committee membership is, of course, a matter which requires a great deal of tact, for people

at very high levels are reluctant to join committees unless they can act as chairmen. But persuade them one must, for persons with less authority in the organization may find difficulty in commandeering substitutes. All of which somehow brings us to the subject of selecting a chairman.[4]

selecting a chairman

If nothing else is done properly during the life history of the committee—and there have been committees like that—the selection of a chairman must be wisely made. His role is so vital to the success of the committee that there is no point in even calling the roll until a capable leader has been found. Fortunately, there are some ground rules which can be used to ensure that this most important step is taken correctly.

selecting a chairman

Since committee members must be persons of considerable stature in the organization, it follows that they should not be led by some simple gonfalonier of low position. Quite the contrary. The chairman must rank any other committee member by at least one notch if he is to maintain the air of benevolent discipline and sociological aplomb that is so important to the committee decision-making process. If the organization is military in nature, selection of a major general is highly recommended. If civilian, perhaps a vice-president will suffice. However, not just any general or vice-president will do. He must have certain important personality characteristics.

Consider, now, the role the chairman must play. First, he must enlist the cooperation of potential committee members, convincing them of the importance of their participation. This may require a certain personal charm, as well as a considerable disregard for facts. To put it more bluntly, the effective chairman should be the type who is able, with sincerity in his voice, to convince the charwoman that the fate of the nation hinges on how she does her job and on whether or not she gets to work on time. The personality characteristics which enable a man to do this are not easily describable. But perhaps it is enough to say that one who admires veracity and has a penchant for facts will hardly fill the bill.

Once the chairman has convinced a sufficient number of the right people to serve, his next task becomes one of persuading them to continue to serve. This is done through a series of "pep talks," friendly pats on the back, whispered confidences to individuals whose interest seems to be flagging, real or imagined communiqués from higher authority, and a variety of similar tactics, all designed to preserve that sense of self-importance which motivated the membership to join in the first place.[5] The exact nature of the techniques which a good chairman will employ are more easily observed than described. Rather than waste more words on description, then, let us get on with the dynamics of a functioning committee—always "keeping an eye out," of course, for the subtle methods employed by the chairman in steering his group toward a satisfactory solution to the problem at hand.

the first meeting

The first meeting will usually be held about a half-hour before quitting time on a Friday afternoon—and this is not accidental. It is simply the chairman's first move in projecting the kind of image he desires. Those

who have been hoping to "duck out" a little early for a weekend at the beach will come to understand that there are *some* things more important than their personal pleasures. Further, they will realize that the chairman is
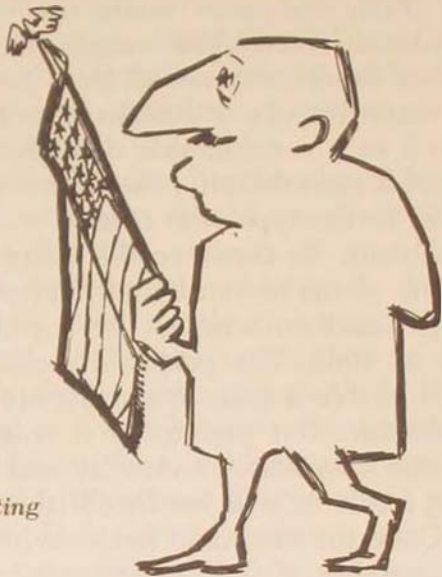
the first meeting

a busy man, unable to fit even an important project into the normal working day, and certainly not a man who watches the clock or stints in giving of himself for the good of the organization. And finally, the members will get the hint that this project will probably require a lot of overtime.[6] This realization will accelerate their efforts to line up not one but several potential substitutes for future meetings, thus again furthering the goal of heterogeneity.

The meeting begins something like this:

Men, for those of you who may not know me, I am Mr. (Dr. or General, as the case may be) McBong—Everett to you, since we will be working very closely together on this project.[7] And I am honored to serve as your chairman during the course of our deliberations. I cannot impress you too much with the importance of the problem we are addressing here. The very future of our organization may well depend upon the decisions reached by this committee. The Chief recognizes this and has instructed me that every man who serves on this group shall be handpicked—chosen for his outstanding analytical capability and his loyalty to our common cause. You are, then, a blue-ribbon group, and great things are expected of you. I intend that we shall succeed in our endeavors and am prepared to promise you all the help you may wish. I have contacted the major research organizations in this country, and you have but to ask and they will be at your disposal. Gentlemen, the sky is the limit, but succeed we must. Now, the first order of business is to choose a code name for this group. To facilitate this process, I have prepared a list of possible names. The secretary will read these and I will then call for a show of hands on each.

Gentlemen, the proposed names are as follows: Slippery Car, Joe's Joint, Balmy Spring, Screaming Arrow, and Twilight Raider.

The list is read again with McBong calling for a show of hands after each code name.

Gentlemen, here are the results:

Slippery Car—five
Joe's Joint—three
Balmy Spring—zero
Screaming Arrow—twelve
Twilight Raider—twenty two.

McBong turns to the secretary.

Dammit, Ed, are you sure you counted those right? I could swear there were some votes for Balmy Spring. Let's run through that again.

The poll is repeated with the same results. At this point, McBong realizes he has a small problem with this committee. Despite the fact that he has hinted at a preference for Balmy Spring, not one single member has seen fit to change his vote. This calls for some strategy.

Men, I've looked over these results, and it's apparent to me that there is a considerable diversity of opinion. This matter is too important to be settled without a clear majority, so I *suggest* we table the whole thing for the moment and take it up again after we've had time to think it over.

Unless someone has some additional business, I recommend we adjourn.

But, sir . . .

Yes, Eagen.

You said something about a problem to be studied.

I think, Eagen, you have received enough

information on this in your pre-meeting notes. No use to take up committee time, just because you didn't do your homework.

But, sir, I didn't receive any pre-meeting notes.

Dammit, Ed, didn't you get those notes in distribution?

No, sir.

Well, why in the hell not?

Well . . . sir . . . you were about to dictate them yesterday when your luncheon date arrived. I guess you were too busy to get back to it after lunch.

Oh . . . hmm . . . well . . . yes, there was that board meeting in the afternoon. Well . . . I suppose I could highlight the main thrust of our problem situation . . . hmm. . . . But maybe we'd better let that go until the next meeting. Be better for everybody. That's all then, men. You'll be notified regarding the time and place of our next get-together.

the second meeting

The second meeting is held at 0700 on the following Friday. The early hour is chosen to permit a good full day of discussion and planning, so that the committee can get on with full-time work the following Monday. The chairman opens the meeting with a few remarks.
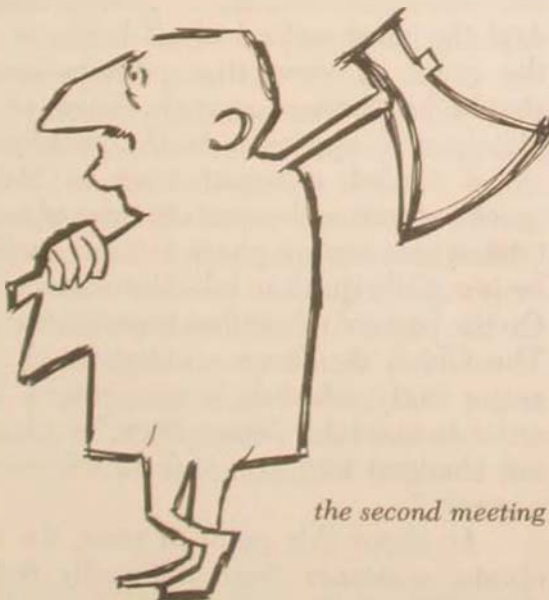
the second meeting

Men, I'm pleased to open this meeting with the announcement that we have at last resolved the matter of a code name for this project. Henceforth we will be known as the Balmy Spring committee.

But, sir . . .

Yes, Eagen.

But, sir, I thought we voted last Friday.

Oh, yes. True, we did take a rather indecisive ballot on the matter. However, since that time, I've had a chance to chat with The Chief on several occasions. I find he definitely prefers Balmy Spring. So I've gone ahead and made it official.[8] Now, I promised to give you a little run-down on the problem we are to study. As you may know, our organization faces an extremely crucial decision regarding which way we should go on equipment. On the one hand, we can choose the Binary Duplexing Processation route—and it has certain costs, capabilities, advantages, and disadvantages. Or we can elect the Winchester-Dublef Procedurization route—and it too has its good and bad points. Or, I suppose we could go for something quite different, although I don't know what it would be. At any rate, I'm not going to stand up here and say Binary Duplexing Processation or Winchester-Dublef Procedurization over and over again. From now on, we will call these two systems BINDUP and WINDUP. Any questions? . . . Okay, Ed, see that those acronyms get into the record, will you?

Yes, sir.

In order to systematize our coordinated efforts, The Chief and I[9] have prepared some handouts. These suggest committee assignments, a few general ground rules, and some procedural methodologies. Rather than waste our time reading them here, I *recommend* we adjourn this meeting, break up into the appropriate groups, and get right on with the job.

conducting the study

The next few months are busy times for most of the committee. Office space and supplies are obtained and the Protocol Group undertakes the unhappy task of allocating furniture and other accouterments on the basis of rank or position—but in a manner aimed at suggesting that each man is as important as the next, if not a good bit more so. As it turns

out, there are enough mahogany desks and individual costumers for the group chiefs; team leaders are provided with metal furniture; and the working personnel get what working personnel in general deserve.

The matter of secretarial help becomes

conducting the study

a rather critical problem at this time, for not just any secretary can meet the requirements of a committee. The good committee secretary must not only be adept at the normal secretarial arts, such as shorthand and typing, but must also be endowed with a certain physiological stamina that permits her to work long and unusual hours. Her personal relationship with the opposite sex should not include a jealous husband or an overly possessive boy friend. And above all, she must be able to make good coffee.[10] It is common knowledge that the diet of the thoroughgoing committee man consists almost entirely of black coffee smothered in cigarette smoke. There is probably nothing, therefore, which will so quickly demoralize a committee as lousy coffee.

After what seems like an almost endless series of interviews, the necessary secretarial support is obtained. Not all committee members are entirely happy with the choice of girls, but this is a matter of small consequence considering how unhappy the girls will be with the committee before they are finished with it.

With the organizational problems solved, the Data Group fans out over the country in search of someone somewhere who has done something analogous to the problem at hand and who has some numbers—preferably on computer cards or magnetic tape. These numbers will be transmitted to the Analysis Group, whose members are already gathering a staff of coders, programmers, mathematicians, and electronic specialists in anticipation of the plethora of data about to descend upon them. Once the data arrive, the technical staff will have the task of translating the borrowed information into a totally new machine language which only the Balmy Spring computer will understand.

In the meantime, members of the Steering Committee are "getting in bed" with members of The Chief's personal staff, seeking to determine what sort of language is most palatable, what kind of logic will be acceptable, and what sort of study results are likely to please.[11]

As the data begin to accumulate, the enormity of the task begins to become apparent. This brings about a crucial situation in the life of the committee. Some of the neophytes in committee procedure begin to make suggestions aimed at simplification of the problem, or streamlining of the study method. Others speak of the prospects of contracting the study, or at least part of it, to some outside agency. There is talk of getting more people, preferably from the organization's lower echelons where workers are in greater abundance. And the most radical of all begin to espouse the point of view that perhaps everything should be thrown away in favor of a completely new approach to the problem.

A skilled chairman such as McBong is quick to sense such manifestations of insecurity, typical of a certain phase in most studies. And he is equally quick to take the necessary action. On the basis of a fictitious communication from The Chief, deadlines are tightened, and the entire study schedule is compressed. Then, in order to meet this "emergency," working hours are changed to 12 on and 12 off, seven days a week.[12]

At about this point in time, the effort to obtain assistance from nationally recognized research organizations begins to pay off. The

committee is visited by a number of eminent researchers, each of whom is given an eight-hour briefing on the problem, the methodology, and the progress made to date. Almost without exception, the experts nod in acquiescence or make some innocuous suggestion regarding the method. And again without exception, they depart immediately after the briefing, leaving only their perfunctory expression of appreciation for having been "brought up to speed" on the study effort.

Once more, dissident voices arise from within the committee. Each visit consumes the better part of a precious working day and apparently yields nothing constructive that can be used in the study. This is of course a short-sighted view, for there could be no happier outcome than that which has occurred. The experts, wise in the ways of committees, have done nothing to further confuse the committee's work. At the same time, they have by their very presence—and their unwillingness to introduce something for which they might later be blamed—put the chairman in a position where he can say that the best brains in the country have reviewed the committee's work and in no way disagree with what it is doing.[13]

Some two weeks later, lightning strikes again. The decision point has been advanced. The committee, which was counting on another three months to complete its work, is now given only two weeks to finish the job. Working hours are increased to 16 a day, eight days a week, and even the group chiefs are forced to pitch in with the work. As the days go on, committee members become haggard, their wives become belligerent, and the secretaries threaten hourly to resign. But a strong chairman can pull a committee through difficult times, and McBong does. Exactly thirty minutes before the deadline, the final product is ready: eight handsomely bound volumes of material, each consisting of some 600 pages with a total of 3267 graphs and figures.

With appropriate pride, the study is de-livered to the office of The Chief, and McBong calls a final meeting of the group for the following day.

Men, I've called you all together to compliment you on a job well done and to offer you my sincere appreciation for your faithful devotion to the organization, as evidenced by your labors over the past several months. I had thought that this would be our last meeting together, but it seems that it is not to be. As you know, our report was delivered to The Chief yesterday. He was most impressed by it—and, by the way, he also sends thanks and a hearty "Well done." However, it seems that despite your valiant effort, we were overtaken by time. The crucial point in the decision process has passed, and we are now on a decisional plateau which will require no further action on the WINDUP-BINDUP matter for at least a year. In the meantime, The Chief has made the point—and it's a very good point—that despite the excellence of our effort, our report represents only one of the several possible ways to study this problem. He has therefore directed that we go back into session, taking advantage of the decisional reprieve we have been given, and institute a full-blown study aimed at determining the *most cost-effective way to study* the WINDUP-BINDUP problem. Men! Let's give it our best!

Hq Strategic Air Command
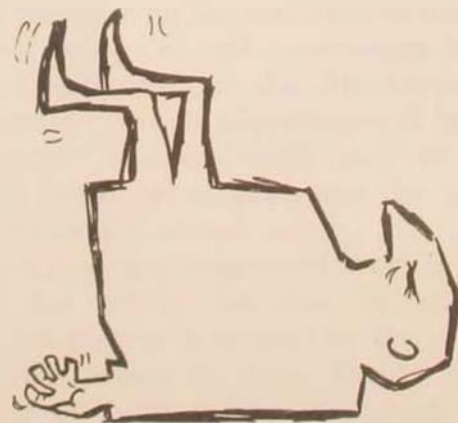
Notes

1. The term "committee" should not be confused with "ad hoc group," "study group," or "working group." While the latter two may be subunits of a committee, they do not themselves enjoy committee status. The term "study group" implies

a small body working continuously, and the term "ad hoc" connotes limited objectives and temporary tenure. None of these things is true of a bona fide committee.

2. We shall ignore here the prospect that a committee's work may not be satisfying to anyone.

3. If one encounters difficulty in reassigning personnel to groups with less prestige, it may be necessary to rename the functions. *The* committee will become the Steering Committee, and working groups may be called Study Committees. This is only a temporary solution, however, for in the interest of discipline it will sooner or later become necessary for the Steering Committee to make it clear that the Study Committees are really *only* working groups in disguise.

4. The problem of selecting committee members may be conveniently dropped at this point. After all, the selection of committee members is the responsibility of the chairman, and once he has been selected, we need have no further concern regarding membership.

5. This activity requires a very delicate sense of emotional rapport. What we are suggesting verges closely on what Abraham Lincoln once said could not be done—fooling all of the people all of the time. On the other hand, given the proper opportunity, it is not really difficult for the average committee member to maintain his sense of self-importance for quite long periods of time.

6. There is an additional benefit to this strategy. If the chairman should be queried by his boss regarding progress on the project, he can simply answer that the committee is working very hard on it—in fact, until seven or eight on Friday night. (Incidentally, in selecting a chairman, it might be well to look for a single man, or at least a man who doesn't get along with his wife.)

7. Most of the group wouldn't dare call him "Everett" to his face, and they have better names for him when his back is turned. However, it is a safe way for the chairman to extend a friendly democratic hand (again in the interest of the right image), for with the exception of a few colleagues chosen for the steering committee, it is unlikely that the group will ever see him again until the project is finished. By then, there will be little chance that anyone will want to become overly familiar with him.

8. With this little ploy, the chairman has made a couple of good points: (1) it is evident to the more sensitive members that despite the chairman's words about friendly and informal relationships, this committee will *not* be a democracy, and (2) he, the chairman, is a close friend or colleague of The Chief and therefore a man of some importance. The first of these two lessons will be driven home when Eagen is appointed to a subgroup in charge of finding office space, obtaining supplies, and running errands for the committee proper.

9. Actually, it was Ed.

10. There will be those who will insist that she also be physically attractive. These individuals simply do not understand the problem. Where can one find a physically attractive female who can make good coffee and does not have some jealous male in hot pursuit of her?

11. The importance of this kind of activity is sometimes overlooked by inexperienced study groups. This is of course a mistake, for they stand in grave danger of wasting the committee's time on a study which arrives at conclusions unacceptable to top management. Such committees are usually redesignated ad hoc groups and immediately disbanded.

12. This is known as the "transference process." Members of the committee will no longer complain about the study; they will only complain about the hours.

13. There is a further benefit worth noting. As a result of having prepared the briefings, some committee members—certainly the briefers—are now familiar with what the committee thinks it is doing.

THE IMPLICATIONS OF "NEW VIEW" FOR MOTIVATING OFFICER BEHAVIOR

Dr. Clifford E. Smith

ORGANIZATIONS are formed for the purpose of achieving an objective. The various activities that occur within the structure of an organization as it pursues its objective are identified as "organization behavior." That factor of production which gives "organization behavior" its unique characteristic is the human element, the people who work within the organization. And "organization behavior" can be conceptualized as the summation of the individual behavior of each member of the organization.

A manager's task, simply stated, is to design and control organization behavior. If we, as managers, wish to influence and modify that behavior, we must understand that to do so we must influence and modify the composite behavior of all the individuals within the organization.

Many managers are currently giving increased attention to the findings of behavioral scientists and considering the implications of their findings on organization structure, managerial behavior, and supervisory techniques. The Department of the Air Force has also recognized that its objectives will be achieved effectively and efficiently only as it understands better what influences the behavior of its officers and men.

In studying behavioral science, one learns that, just as the behavior or movement of physical objects is caused by the combination of forces acting on them, human behavior is caused by many influential factors. One finds also that human behavior is need-oriented.[1] That is, behavior is aimed at the fulfillment of some need or combination of needs experienced by the individual. If we define a goal

as that which will satisfy a given need, we can say that man is goal-oriented or goal-directed. The concept of individual motivation can now be introduced and defined as the *willingness of the individual to expend energy to achieve a goal and satisfy a need.*

Managers in industry are concerned with the task of motivating their employees. A work force that is poorly motivated may exhibit lower productivity, poorer quality, more numerous grievances, and increased turnover when compared with a highly motivated work force. An organization so characterized is costly, while the development of highly motivated workers is economical. The Air Force also has a deep concern for the problem of motivating officers and airmen. Air Force personnel who are poorly motivated toward Air Force objectives will show lower productivity, increased discontent with their circumstances, and a desire to get out of the Air Force. The cost to the nation and the Air Force in lost production and in replacement training is considerable. These costs could be reduced by the increased retention rates and greater productivity associated with highly motivated personnel.

It is important to note that every individual is motivated to some degree. This motivation influences behavior that is directed toward his personal goals, the achievement of which he believes will satisfy his current needs. As managers we try to influence that portion of the individual's behavior which occurs within the work environment. We expect that behavior to be coordinated with the behavior of other individuals and lead to the achievement of the organization's objectives.

The problem faced by managers, then, is the structuring of a work environment that allows the individual to achieve personal goals and satisfy needs while at the same time assisting the organization to achieve its objectives. Only then do we have highly motivated employees from a manager's viewpoint.

In 1966 the United States Air Force, concerned with the problem of motivating Air Force officers and identifying factors influencing motivation, undertook a study of the matter. The study report, entitled *A Study in Officer Motivation (New View),* was completed in March 1967.[2]

The "New View" study was a systematic approach, using well-recognized research techniques to ascertain those factors or variables that influence Air Force job performance (productivity) and retention. From 15,772 junior officers (2 to 5 years' service) a random selection provided the group to be studied. Data on their attitudes were obtained by a personal two-hour interview by trained interviewers.

The research technique utilized was the one developed by Professor Frederick Herzberg in research leading to his motivation-hygiene theory.[3] A summary of his findings is shown in Figure 1. Herzberg reached the following conclusions:

Feelings of strong job satisfaction come principally from the job itself and the opportunities for *Achievement,* the *Recognition* for the achievement, *Work Itself, Responsibility,* and professional *Advancement* and *Growth.* These

Figure 1. Civilian job profile (200 engineers and accountants in the Pittsburgh area). Distance from neutral point indicates frequency of attitudinal factor. The wider the box, the longer the duration of the attitude.
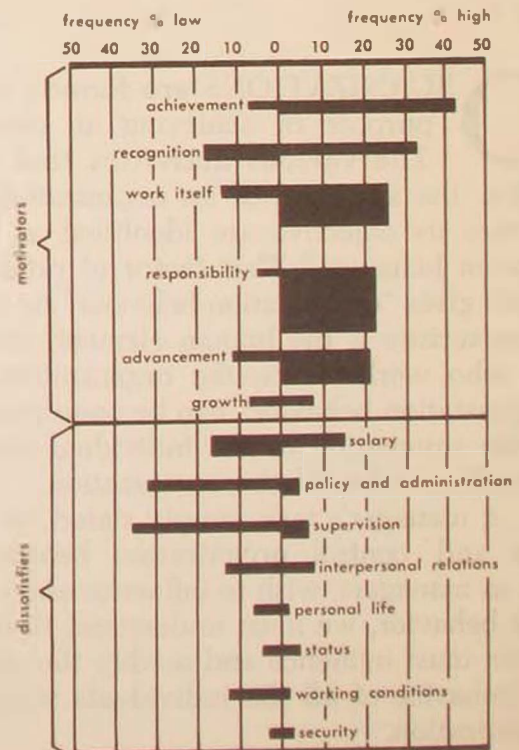
factors are termed motivators since their presence in a worker's job produces not only job satisfaction, but also increased productivity and retention. Feelings of dissatisfaction are more likely to be attached to the environment in which one does his job, from such factors as company policies and administration, supervision, working conditions, salary, personal life and interpersonal relations. These factors are called "dissatisfiers" and are the source of job dissatisfaction that results in decreased productivity and retention. When both the motivators and dissatisfiers are properly applied and controlled, a motivated and productive worker is more likely to result.

"New View" confirmed Herzberg's theory for the officer group investigated, finding the motivators leading to job satisfaction in the Air Force to be achievement, recognition, work itself, responsibility, advancement, growth, and patriotism, and the dissatisfiers to be salary, policy and administration, supervision, interpersonal relations, personal life, status, working conditions, and security.

"New View" thus provided an answer to the question, What motivates an individual in the Air Force? It also provided a general answer to the question, How do we motivate the individual? We need to make his job rich in motivators. The technique of doing this is called job enrichment by Herzberg. This is not to be considered the same as job enlargement. A job that is boring and unchallenging is not enriched by being enlarged; it is only a bigger boring and unchallenging job. What is required is the addition of motivational factors to the job assignment.

Believing "New View" to be a very important report and worthy of study and application by every officer in the Air Force, we submit our analysis of it as a guide for implementation.

While the "New View" study gives new insight on what motivates the junior officer, further study would probably yield similar findings for all Air Force officers and airmen. The question is then how to utilize these findings to yield improved productivity, job performance, and lower turnover. The study gives some general guides but does not suggest specific actions to be taken, as these must
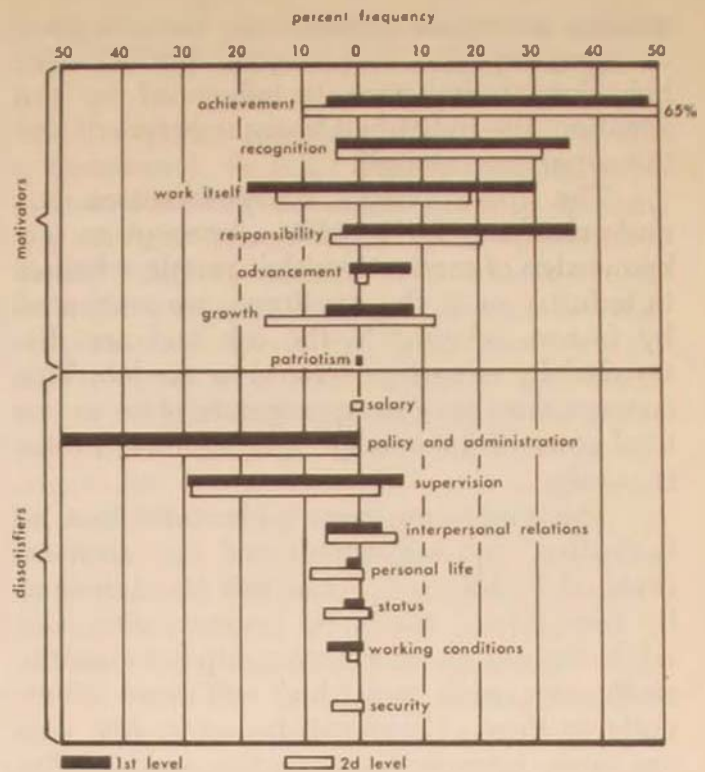

Figure 2. Air Force job profile (total group of officers)

be determined by individual officers and commanders.

There are two important actions which officers and commanders should take. First they should begin motivating subordinates by seeing that the jobs under their command are rich in motivational factors. A job assignment should offer possibilities for achievement, recognition, advancement, growth, and responsibility as well as be challenging and interesting. Herzberg identifies this condition as job enrichment.

Second, we need to improve those factors that provide the principal sources of job dissatisfaction: salary, organizational policy and administration, supervision, working conditions, status, and security.

While it is easy to make these simple though general statements, it certainly is more easily said than done.

When dealing with the human element, we must always remember that there is no book of rules and procedures to guide us infallibly in all situations. We may establish

guiding principles to assist us, but we need to recognize that a manager's (or officer's) behavior at any time is influenced by the situation, the individual being supervised, and the supervisor himself.

The "New View" study increases our understanding, for it adds a concept to our knowledge of motivation: that people, whether in industry or in the Air Force, are motivated by factors relating to the job and are dissatisfied by factors peripheral to the job. This concept must take its appropriate place in our total store of knowledge, and we must utilize it wisely.

The supervisor must understand that he is dealing with individuals and that each individual is different. Some will be motivated by recognition, others by responsibility; and while there is an interrelationship between the motivators, each individual will react differently to them. There will be some, too, who are more interested in security and stability and will be frustrated and insecure when given a responsible, challenging assignment.

It is important to recognize, then, that there is no one single procedure, no structural program, which all commanders can initiate within their command to ensure more highly motivated individuals. Job enrichment is an individual-to-individual action performed by a supervisor for a specific individual on his specific job. What is desirable in one situation with one individual may not be satisfactory in a different situation and with another individual.

The implementation of "New View" therefore involves not so much a specific program or procedure for everyone to follow as an atmosphere—an attitude—that pervades the total organization. Although this atmosphere or attitude can be limited to a suborganization, it produces the most benefit when it pervades the total organization from top to bottom. It is my firm belief that the maximum benefits from this study will be realized only as its implications are understood by the highest authorities, who allow it to influence their method of management and thereby influence its adoption all the way down to each individual officer.

While I cannot be specific on how to implement "New View" knowledge, I can indicate some actions which would be inadvisable or questionable. As noted earlier, there can be no one program or action that will work for everyone. It would be a mistake to establish by command specific programs designed to motivate officers and men. All actions taken must be taken honestly and sincerely, not because of command edict. The atmosphere or attitude of each officer is more important than the specific program, which will differ between groups.

Care must be taken that actions intended to motivate are not in fact more concerned with those factors which are a source of job dissatisfaction. While it is important to reduce those irritants which cause one to be dissatisfied with the job, one misses the point of "New View" if he thinks such action will motivate the individual.

It is important that one's actions be sincere. Too often a supervisor may attempt to give the "feeling" of responsibility, or the "feeling" of recognition, when no responsibility or recognition is in fact given. This is pure employee manipulation. While successful at times, when discovered (as it often is) the result is reduced motivation and increased dissatisfaction. We are not interested in giving people the "feeling" of something, but in giving them the real thing.

In building a motivating, job-enriching atmosphere, one should consider such things as encouraging further education and study, participation on junior officer councils, interviews with the individuals, awards, and field contacts by commanders.

Education can be a motivator and desirable if the individual, once he has gained the additional knowledge or degree, is given the opportunity of using it on the job, either through job enrichment or promotion. Educational opportunities provided for the individual will raise his expectations. If he is not given the opportunity to use his increased knowledge on the job, once he has completed a course of study or reached a higher level of capability, he may be motivated to look elsewhere for opportunities and leave. Therefore

it might be wiser not to encourage his educational pursuits unless he can be given an enriched assignment, a promotion, or another job change that will allow him to use his new skills.

Junior officer councils can be an excellent way of giving recognition and responsibility provided they are doing meaningful work and are taken seriously by the commander. They should not be used as a convenient tool of the commander to get annoying little jobs done that he personally is not interested in or which are really negligible in importance. Too often the jobs may be used to give the officers a "feeling" of involvement and participation whereas their assigned tasks indicate this is not true involvement.

It is quite possible that some commanders will assign to junior officer councils the job of implementing "New View." In my opinion this is a mistake. How can the junior officer council advise the commander that he needs to reconsider his approach to job assignments? How can they tell him it must start at the top and filter down through the total organization? How can they say, "Our jobs are lacking in motivational factors; enrich our jobs"? As noted earlier, implementing of "New View" cannot be delegated but must be the responsibility of each officer who supervises another, starting at the top.

In the area of recognition, there may be a number of programs similar to "Junior Officer of the Month" and "Accent on Bars." These can be worthwhile, but they only scratch the surface. You don't motivate a thousand men by recognizing one of them, and even one a month does not give many a chance to be recognized during the year. Recognition as a motivator needs to be less dramatic and more personal. It is the awareness by the individual on a daily basis that is important. This is accomplished in many ways by the supervisor as he relates to the worker—by thanks for a good job, a word of praise sincerely given, daily courtesies showing interest in the individual as a person. This is the important and basic recognition that is required, with a base award of some type as frosting on the cake.

An officer may utilize interviews with lower-ranking officers in an attempt to get a "feel" of his organization. I believe this approach and the resulting information should be questioned. To what degree does the subordinate feel free to express his true opinion to a superior officer? What is the possibility that he will communicate only what he feels the supervisor wants to hear? People are not completely free to express themselves, particularly to those who have influence over their careers. While this approach must be criticized, it is important to note that it can be a significant action. The problem is to increase the reliability of the information received, by developing an atmosphere that encourages a higher level of reliable and meaningful communication.

How can this be accomplished? One method would be by studies and reports like "New View." In a sense this is a communication from a group of officers concerning what motivates them and what causes job dissatisfaction. Other studies of attitude might also be helpful in this respect. A second method, and by far the best, is to develop an atmosphere which encourages a high degree of honest communication among all levels of the hierarchy. This requires greater communication feedback within a supportive atmosphere.

Rensis Likert has said that this atmosphere can be achieved by practicing the "Principle of Supportive Relationships." The principle can be briefly stated:

> The leadership and other processes of the organization must be such as to ensure a maximum probability that in all interactions and all relationships, within the organization, each member will, in the light of his background, values, and expectations, view the experience as supportive and one which builds and maintains his sense of personal worth and importance.[1]

This requires the supervisor to be sincerely concerned about others. He needs to treat them as equals and important rather than as objects to be moved or manipulated for his good. By building this concern into the organization and practicing it in everyday contacts, he will develop an increased capability

to communicate with other individuals, and the information received will be more accurate, more reliable, and more helpful. Until he has developed an organization that achieves high-quality communication, he needs studies like "New View" to provide a better understanding of cause-and-effect relationships.

Changes in causal variables will influence intervening variables, which in turn affect end results. More meaningful measures of intervening variables will help managers to predict end results or will indicate when changes are needed in the causal variables. For example, job enrichment would be identified as a change in the causal variables. This change will result, according to "New View," in more favorable attitudes about the Air Force.

More favorable attitudes about the Air Force will result in increased retention rates—an end result. There is a time delay, however,

in this sequence of actions. One follows the other. Unless we measure the intervening variable (officer or airman attitude), we may make the mistake of expecting a change in end results too quickly after a change in causal variables. Without these measurements we may abandon a change as unsuccessful whereas in fact it was successful and was only delayed in influencing the end results. Techniques for measuring intervening variables need to be developed and used by the Air Force.

The lessons of "New View," properly applied, will assist each officer to develop the work environment and work assignments under his command so as to enable each individual to satisfy his personal needs and achieve personal goals while highly motivated to support the Air Force in its task of national defense.

Ames, Iowa

Notes

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Air Force Review

MARCE

Major General George M. Johnson, Jr.

IN THIS century American military men serving in Europe have become involved with some legendary ladies. There was Mademoiselle from Armentières, beloved by the doughboys in World War I. A generation later it was a wistful Lili Marlene who captured the fancy of both Allied and Axis combat troops. Now in the stormy sixties, the Materiel Staff of the United States Air Forces in Europe (USAFE) has created "MARCE," which sounds like a candidate for the fabled feminine list.

As it happens, "MARCE" isn't the name of a girl at all. Neither will it be found in any romantic song titles. It is the acronym for "Materiel Asset Redistribution Center, Europe."

To tell the MARCE story properly a flashback to the spring of 1966, when USAFE was suddenly confronted with a situation not unlike that of a storekeeper who has just been told that he has lost his lease. In March of that year, President de Gaulle announced his desire that all NATO military forces be withdrawn from French soil. With the stroke of a pen, the Allied Command Europe, of which USAFE is a major air component, lost its French bases.

While this action jolted diplomats and military tacticians on both sides of the Iron Curtain into a great effort to divine its implications, logisticians at Headquarters USAFE in Wiesbaden, Germany, felt more like Mahomet facing the immovable mountain. For them, the De Gaulle decree added up to the closing of 9 air bases and over 75 smaller installations. Some 37,000 Air Force personnel and their families would have to be uprooted and more than a dozen tactical units relocated. At the same time, a ponderous 85,000 tons of supplies and equipment would have to be packed up and closet space found for them elsewhere.

The government of France requested that the NATO military force withdrawal be completed by 1 April 1967. The full energy of the USAFE staff was focused on the task, and "FRELOC," which stands for *fast relocation*, was added to the Air Force acronym file.

For USAFE, the magnitude of the FRELOC operation could be compared to a situation in which a great chain of retail stores found itself not only being forced to vacate 80-odd of its branch outlets but also having to move some of the towns in which they were located.

Among the immediate consequences of the French edict would be some hardship on the Air Force personnel being moved and an urgent need to find beddown space for tactical

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*The Materiel Asset Redistribution Center, Europe (MARCE) receives requests for
supplies and equipment from Army, Navy, and Air Force units in Europe, the Middle East, and
Africa. . . . Transceiver header cards are prepared in the Center covering
each order destination. . . . The computer data bank matches the requested items
against its stock of items available for redistribution. . . . The resultant
redistribution orders, status cards, and those requests that must be forwarded to CONUS
are delivered to the USAFE Communication Center for further action.*

units and their support elements, to insure continued accomplishment of the command's vitally important missions. One of the most serious problems would be how to handle the millions of pounds of excess base-funded supplies no longer needed to operate the French bases for which they were procured. This towering stockpile of materiel represented a lot of money, a commodity hard to come by in these days of greyhound-lean military budgets.

During this same period a number of USAFE bases outside of France had several million dollars' worth of supply requests backlogged for want of funds. USAFE found itself with too many eggs in one basket and not enough in another. If a rapid and economical method of matching these backlogged needs with French-base surpluses could be found, a big cut could be made in the cost to our government of the De Gaulle decision. Under any circumstance the sorting and redistributing of the massive quantity of materiel stored in France would be difficult. The relatively short time imposed by De Gaulle further complicated the job.

Manual methods of cataloging and redistributing excess materiel, even in limited quantities and when processing time is not critical, have always been expensive and only moderately successful. The sheer size of the FRELOC task called for a faster and more efficient approach. Automation was the answer. And, conveniently housed about 150 yards from the DCS/Materiel offices on Lindsey Air Station in Wiesbaden was an IBM 1410 computer, part of USAFE's command and control system. Arrangements were made to get some time and data bank space on the big black box. This done, Hq USAFE established the Computerized Excess Redistribution Center (CERC), the mother of MARCE.

During the preparatory phase the Directorate of Data Automation, DCS/Comptroller, at Hq USAFE developed the necessary computer programs. USAFE then instructed its French bases to report their excess serviceable supplies. At the same time all field units were directed to forward punch-card decks reflecting unfilled supply requisitions. All the data were then fed into the computer. The matching operation commenced in September 1966, using six hours of borrowed computer time nightly, five days a week.

It soon became apparent that this borrowed computer was incapable of adequately sustaining the CERC effort. Consequently steps were taken to obtain an IBM 1401 computer for the exclusive use of the redistribution center. It was obtained, contingent upon expansion of the CERC system to an interservice level, on 1 July 1967. Thus USAFE's Computerized Excess Redistribution Center gave birth to MARCE.

An expert and enthusiastic USAFE Materiel staff swung into action and quickly accomplished the routine spade work, such as the writing of plans and technical manuals and the organization of a work force. The basic objectives of the MARCE system were spelled out:

a. To provide a centralized service for screening and redistribution of excess materiel in the European Theater.

b. To maximize use of existing materiel assets of the military services in Europe.

c. To eliminate concurrent procurement and disposal of items for which a valid requirement exists.

d. To preclude trans-Atlantic transportation costs when similar items are available in the European Theater.

e. To provide data for inventory managers to use as an aid in item management.

The MARCE system began operating on 12 July 1967. Its first redistribution order was for a vehicle part with a name that only an automobile mechanic could recognize or appreciate: "Rigid Cushion Segment Disc." Price—$8.36. The part was surplus at Hahn Air Base in Germany, and it was shipped to Mildenhall Air Base in England, where it was needed.

MARCE made it mandatory for all routine supply requisitions to be processed through the computer bank at Hq USAFE before submission to stateside sources. In the case of high-priority requisitions, the bases were given the option of running them through the MARCE bank or submitting them stateside.

The MARCE system was geared to locate, package, and ship supplies and hardware with

no price-tag restrictions. In other words, the goal is to process requirements for anything from paper clips to power plants, from clip boards to kitchen sinks, in 24 hours. It has shown that low-cost items can be redistributed economically.

Today a good merchandising operation must include a way to deliver the goods to the customer. Delivery service for MARCE orders is provided by organic or common-user transportation units when available, or by ordinary mail or parcel post.

The MARCE procedure is a simple one. The U.S. Army, Navy, and Air Force units based in Europe, North Africa, and the Middle East report their excess stocks to the computer facility at Hq USAFE. This information is cranked into the computer's data bank for a 90-day period. Meanwhile requisitions submitted by any using agency in the system are passed through the bank for a match. If a desired item is listed as excess at any participating base, the requirement is thus satisfied. The computer uses an internally loaded geographical matrix to identify the source of supply closest to the requestor's location. This reduces transportation costs to a minimum. Since nearly all the agencies and bases using the service are computer-equipped, the order-filling process is swift and automatic. To avoid wasting valuable space in the computer bank, items for which no requests are received in 90 days are removed and farmed out to other disposal agencies. The MARCE facility operates 16 hours a day, 7 days a week, on a 2-shift basis to insure 24-hour processing service on all orders received.

The success of the MARCE program has exceeded all expectations. In the first six months of its operation, from July through December 1967, over 104,000 line items valued at $2.7 million were redistributed; and in the first four months of 1968, 64,000 items worth $1.5 million.

Currently the MARCE computer is using 29 separate programs for daily, weekly, and monthly processing actions. Its bank now houses about 200,000 line items, varying in value from pennies to $6000. The network of U.S. activities using MARCE to clear excess stocks includes 1400 of the Army, 32 of the USAF, and 19 of the Navy.

In the first year of its operation, the value of the materiel handled by MARCE averaged about a half million dollars per month. A steady increase in volume occurred, and in May 1968 the one million dollar level was passed. The number of requisitions received also has climbed steadily. MARCE is now receiving and processing an average of 50,000 requests per month and is satisfying nearly 15 percent of them from its bank. To date, MARCE and its forerunner, CERC, have redistributed over 300,000 line items, valued at $9 million, in base-funded supplies.

The overhead costs associated with the MARCE system add up to a remarkably low 3.5 percent of the redistribution dollar. This total includes computer rental and personnel and supply costs. More impressive yet is the fact that the average value of the order delivered is $28, with a mean transportation cost of 59 cents.

While MARCE is becoming a familiar name among the military in the United States force based in Europe, a related name is becoming known in the Far East. Early in 1968 USAF experts journeyed to Okinawa to assist the U.S. Army 2d Logistics Command in setting up a similar system, to be called PACOM Utilization and Redistribution Agency (PURA). Thus the concept of computer-assisted redistribution of valuable serviceable materiel stocks marches on.

Hq United States Air Forces in Europe

Military Affairs Abroad

CENTRAL AMERICAN DEFENSE COUNCIL

Some Problems and Achievements

LIEUTENANT COLONEL LAUN C. SMITH, JR.

"Nicaragua has been invaded by guerrilla forces. We have engaged the aggressors in action near Waspan and Puerto Cabezas but have been unable to contain them. The people in the area have been terrorized to the point where they are afraid to cooperate with government forces. We need help in the form of troops and equipment from the Central American Defense Council."

This was the urgent phone call received by the president of COPECODECA, *the permanent working staff of the Central American Defense Council* CONDECA), *on 20 March 1968.[*]*

The call for help started the CONDECA *machinery in operation, and the council responded by sending troops and equipment to Nicaragua's east coast to drive out the enemy. They succeeded, and Nicaraguan soil is again free from the gunfire and terrorism of external forces.*

THE ABOVE action did not actually take place, but it was more than a hypothetical situation. It happened as a joint/combined

[*]Central America is composed of the following republics: Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua. Panama, also located in the Central American Isthmus, is not historically identified with Central America—although Panama as participated in CONDECA-sponsored exercises.

training exercise planned and conducted by COPECODECA, whose offices are located permanently in Guatemala City, Guatemala.

The United States Southern Command (USSOUTHCOM), headquartered at Quarry Heights in the Panama Canal Zone, had been invited by the Central Americans to participate in their exercise. USSOUTHCOM responded by sending personnel to work with the COPECODECA planning staff and by providing land, sea, and air forces for the actual operation.

The fact that the Central Americans wanted to conduct a joint/combined exercise was significant, to the people of USSOUTHCOM, though to them the exercise itself was routine. But to the Central Americans nothing was routine. The professional military planners of COPECODECA, composed of officers from Central American land, sea, and air forces, are in dead earnest about many things. They believe in the concept of a Central American Defense Council. They believe in the idea of training armed forces with sufficient strength to maintain and defend the integrity of the Isthmus of Central America. They believe that they can work together not only to repel aggressors from external sources but also to help solve

problems internal to the Isthmus. They wanted "Operation Nicarao," the name of the exercise conducted in Nicaragua, to be a success.

"Operation Nicarao" had to be a success, for the future of CONDECA depended partly on its outcome. There were, and still are, people in Central America who do not believe in CONDECA, nor do they believe that Central Americans from different governments can work in harmony.

attempts at unification

Even before the arrival of the Spanish conquistadores, the area now known as Central America was inhabited by Indian tribes who bickered over ill-defined boundaries. The arrival of the conquistadores in 1523, and the resulting military conquest and land-grant system, only served to heighten the bickering and fighting over borders. And since the first declaration of independence from Spain in 1821, border disputes have been a stumbling block to unification of the Central American states.

From the colonial period has come the idea of a unified Central America, for from 1523 until 1821 the area was a political unity under the Governor of the Captaincy General of Guatemala, except for a short time when the government was centered in El Salvador. From then until the present there have been champions for the cause of unification. Ethnically and socially there should be no problem, for the background of the people of Central America is primarily Spanish or a mixture of Spanish and Indian (Ladino), their religion is primarily Catholic, their primary language is Spanish, and their customs and traditions are basically the same.

On 1 June 1823 the United Provinces of Central America declared their independence from Spain, Mexico, and all others who might claim the area. But the Federation was dissolved in 1838, and it was not until 1885 that a movement for political unity was again made. In February of 1885 the President of Guatemala, General Justo Rufino Barrios, invited the other states to join in the Union of Central America. Barrios was killed, though, in April of 1885, and the movement ended.

Since then there have been other tentative overtures for union—in 1887, 1895, 1898, 1907, and 1921. The 1921 attempt, victim of political disagreements on the part of member states, was the last effort at federation by the Central Americas.[1]

But it was not the last attempt at joint action, for the Organization of Central American States (ODECA) was formed on 14 October 1951 at a meeting in San Salvador. The Charter of San Salvador was ratified by all the governments of Central America, and on 18

In Operation Nicarao, April 1968, troops of El Sal Guatemala, Nicaragua, and the U.S. trained for re defense. Airborne and amphibious assaults were near Puerto Cabezas, Nicaragua. At the airstrip headquarters (left) directed air activities, a B-26 so the area for paratroops, who secured the base, en a C-47 to land more troops. . . . Friendly force rillas" awaited Nicarao troops storming nearby be

August 1955 the foreign ministers held their first meeting at Antigua, Guatemala. There ensued the Declaration of Antigua, Guatemala, which decreed that subordinate organizations should be formed under ODECA, to help establish systems of organization and procedure so there would be no restrictions to free intercourse, to economic cooperation, to better sanitary conditions for member nations, and to continued progress in the "integral union" of the Central American nations. The importance of the member nations' working together to "assure defense against common dangers" was also stipulated.[2]

As a result of the first Central American Defense Ministers' Conference, held in Antigua, Guatemala, in January 1956, the concept of a Central American Defense Council was finally voiced. The conferees recommended to the meeting of foreign ministers that CONDECA be created as a subsidiary organ of ODECA, "for the purpose of studying military problems, maintenance of peace and planning for the joint defense of Central America, in coordination with the continental defense plans prepared by the Inter-American Defense Board and in accordance with the provisions of the Inter-American Treaty for Reciprocal Assistance."[3]

A special Combined Central American Commission met twice in 1957 to conduct various studies of a military character. Among these was a study for the creation of CONDECA. But a series of circumstances, primarily involving internal political and social unrest, caused the plan to be tabled for several years. In 1961 the subject was broached again, and in September of that year the First Meeting of the Chiefs of Staff of the Central American Isthmus was convened in Guatemala City. A resolution at that meeting said, in part, "The countries of the Isthmus of Central America are signatories to the Inter-American Treaty of Reciprocal Assistance celebrated in Rio de Janeiro in 1947, and they are considered to be a geographic unity for continental defense." Therefore, the resolution stated that the countries of Central America ". . . are obligated to unify and coordinate their forces in defense of democratic interests, the liberty and institutionality of their people, and their human rights, against the totalitarian threat of communism."[4]

The committee members then recommended that a permanent Council of Defense be organized and that a commission representing the armed forces of each country should meet in Managua, Nicaragua, to create a Council of Defense. The Guatemala City conferees also determined the bases upon which the Managua conference was to establish the council.[5]

The Managua Commission met, as scheduled, from 11 to 16 October 1961 and planned the Defense Council's organization. The Commission presented its recommendations to the foreign ministers of Central America, who met at Panama City, Panama, in December 1962. On 12 December the foreign ministers signed a new charter for ODECA, and among those new organizations authorized was the Central American Defense Council. (Figure 1) Not until 14 December 1963, was the agreement for creation and operation of the Central American Defense Council signed. The defense ministers met in Guatemala and agreed that CONDECA would become an entity upon ratification of the agreement by the governments of the three signatories—Guatemala, Honduras, and Nicaragua—and that the door would be left open for Costa Rica, El Salvador, and Panama° also, to become members upon ratification by their governments. Thus far in the proceedings Costa Rica and Panama had been present in an observer capacity only, while El Salvador had presented an attitude of reserve.[6]

The Central American Defense Council convened for the first time from 23 to 27 June 1964 in Guatemala City, its permanent location. Its permanent working staff (COPECODECA) began operations in September of the same year, with representatives from Guatemala, Honduras, and Nicaragua holding office.[7]

The ODECA charter was finally ratified by all of the republics by 9 March 1965. It automatically went into effect, and El Salvador and Costa Rica became members of CONDECA on the same date.

Thus, it took the Central American republics from the dissolution of the United Provinces of Central America in 1838 until the first meeting of ODECA in 1955 to overcome the many obstacles to unified effort in common interests. Then it took nine more years to establish an organ for common defense. Even today this unity is made rather tenuous from time to time by the political and economic vicissitudes of the area.
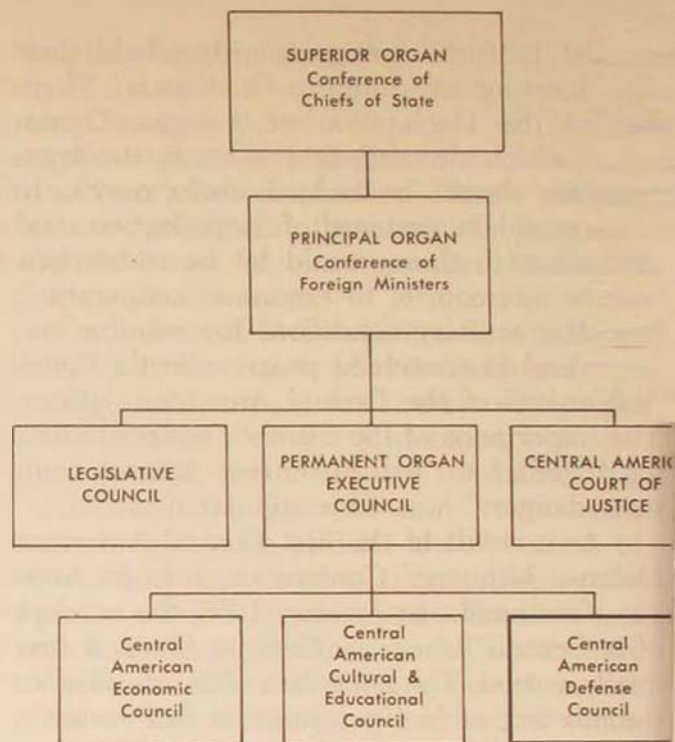
The many revolutions and the resultant

Figure 1. The Organization of Central American States (ODECA)

changes in governments over the past 147 years were generally fostered by the politico-economic ambitions of warring factions of the landed gentry. But to be successful these factions had to have the tacit or real assistance of the military. More often than not the military leaders and the landed gentry were composed of the same people, or of relatives. So it has been that the military leadership of Central America has become closely associated with the conservative status quo. As such, in the past they have been tagged as opponents of progress and, correctly or not, have been blamed for brutal treatment of the masses. Suffice it to say that it has been difficult for the Central American military to live down the accusations of the ages.

The fact that CONDECA was established—to help defend Central America so their common market can operate without external military threats—is an indication that the Central American military man today is a dedicated one who is making progress in gaining the confidence of the people. It further indicates that there is a growing respect for the Central

°Although Panama has participated in CONDECA-sponsored exercises, the Republic is not yet a member.

American military. Their doctrine is changing, influenced in no small part by constant contact with United States military men stationed in Central America, particularly in the U.S. military groups. Of great value has been the role of U.S. military schools in the Panama Canal Zone and of U.S. Mobile Training Teams sent to Central America at the request of the host governments.

There is a new attitude on the part of the military, which has been evidenced in many ways over the past few years. The military leaders who form the backbone of CONDECA, and of COPECODECA in particular, recognize the need for a better educated and better trained military. It is possible now for men from the masses to become officers. The emphasis on civic action and other public assistance programs is on the increase. Nevertheless, there is still much to be done to raise the professional standard of the Central American soldier. CONDECA realizes this, and COPECODECA is working diligently—in the face of great odds, at times—to correct the problems.

organization and functions of CONDECA

The Central American Defense Council is composed of the defense ministers or representatives, according to their corresponding rank or functions in the respective member states. The Council acts as a consultative organ in matters of regional defense and reports to the ministers of foreign relations (ODECA) through the Executive Council.

CONDECA's mission is set forth as follows. The Council is responsible for:

• Maintaining peace and collective security of Central America.

• Proposing to the Central American governments convenient and opportune means for the coordinated employment of the armed or public security forces.

• Recommending the organization of a joint-combined general staff or unification of command when the defense of the Central American Isthmus requires it or CONDECA deems it convenient.

• Advising the governments of the par-

ticipating states in matters of Central American defense doctrine related to the application of treaties in matters of collective security.

• Performing technical studies and gathering information requested by the respective governments.[8]

CONDECA's purpose was clearly defined by its organizers at their first meeting. They resolved to establish a defense doctrine that will guarantee the sovereignty and independence of member states and "follow the ideals of democracy, liberty and justice." They agreed to maintain up-to-date collective defense plans. They emphasized the need to promote and coordinate the civic action programs of the armed forces for the "economic, social and cultural development of the people," and they proposed to initiate adequate instruction and training so the armed forces will be capable of operating collectively.

To ensure that the latter point is adequately treated, CONDECA decided to study the possibility of establishing teaching centers for the "joint preparation of personnel of the Armed Forces; to arrange for uniformity of equipment, arms, tactical and logistical problems; to adopt agreements through which logistical and administrative systems can be set up; and to hold military exercises."[9]

General Robert W. Porter, Jr., U.S. Army, Commander in Chief, U.S. Southern Command, receives a baton from Colonel Renato Delcore A. of Costa Rica, then president of COPECODECA, as a token of cordial relationship between Central Americans and personnel of USSOUTHCOM.

CONDECA meets once each year, unless called into session by a member state. Each state has one vote. Questions of procedure are decided by a simple majority, but resolutions must be approved by a unanimous vote.

organization and functions of COPECODECA

COPECODECA, unlike its parent organization, functions continuously as the permanent working staff of CONDECA. It performs technical studies, plans military exercises, and is in general the professional military planning organ of CONDECA. COPECODECA is located permanently in Guatemala City and is composed of delegates of the armed forces of member states. The chief of each delegation assumes the role of delegate and serves on the Council of Delegates. (See Figure 2.) The Council of Delegates is the decision-making organ, which is headed by the president of COPECODECA.

The president of COPECODECA, the chief of staff, and the secretary general hold office for one year. They are replaced on a rotational basis in geographical order from north to south. One country cannot hold more than one office at a time, nor can it hold the same office for two years.[10]

COPECODECA's first year of operations, July 1964 through June 1965, was principally dedicated to organization and regulation of the internal operations of the staff. During the second year, however, two training exercises were held and plans were under way for a third.

After careful analysis of the world situation, the geographical position of Central America, and its strategic and tactical position as the connecting land mass between North and South America, the most immediate threat to the area seemed to be that of insurgency fostered by Communist guerrilla forces from without. To Central American military planners the threat of Fidel Castro's brand of Communistic aggression is very real, and they are determined to keep the Communists from overrunning the Isthmus. Therefore, they recognize that their training must be in unsophisticated counterinsurgency operations and in coastal defense and surveillance.

Operation Halcon Vista

Operation Halcon Vista has become an annual joint/combined exercise to train the countries of the Caribbean area in coastal surveillance and intercept operations. The 1965 exercise was participated in by Guatemala, El Salvador, Honduras, Nicaragua, and the United States. It lasted from 24 September, when the joint/combined general staff met in Guatemala and began the initial intelligence collection phase, and ended with a critique of the exercise on 8 October. Exercise

Figure 2. The Central American Defense Council (CON-DECA) and its permanent working staff (COPECODECA)
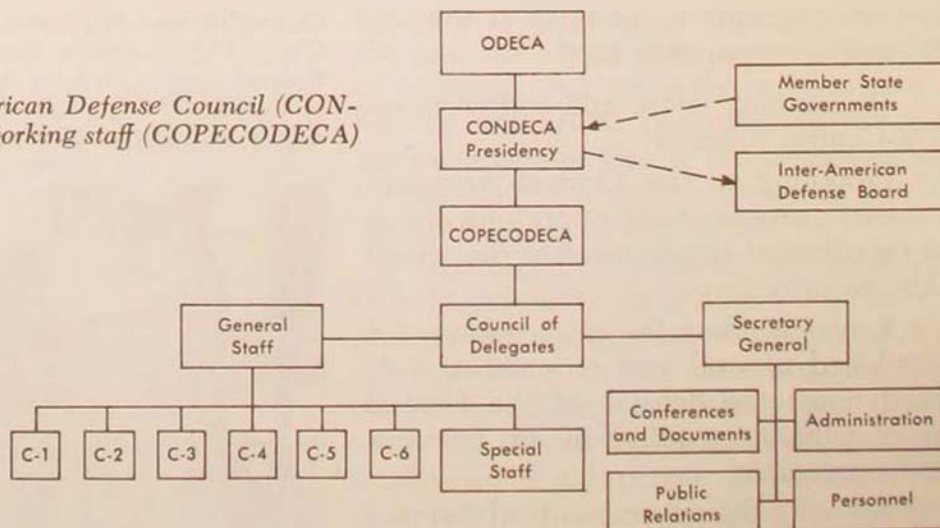
tactical operations took place from 1 through 6 October.

The operation was planned at COPECODECA headquarters in collaboration with the countries participating. The operational concept called for the participating elements to conduct a military exercise for the purpose of "locating, tracing and intercepting a suspect ship navigating in the Caribbean, and whose purpose was to disembark men, arms, and propaganda clandestinely on the coast of Guatemala and Honduras."[11]

Operation Halcon Vista was beneficial, in the opinion of the Central American Defense Council, for it set a guideline for planning and executing joint/combined exercises with CONDECA countries and the United States. One item of the utmost significance, however, was the fact that it demonstrated that the armed forces of the Isthmus could work together in friendship. This achievement was not lost on the Central Americans; with their first operation successfully accomplished, they approached the next one with more confidence.

Operation Central America

Operation Central America had its origin at the first meeting of CONDECA, by means of Directive No. 001, dated 3 June 1965. It was completely planned by COPECODECA and executed by the Central American armed forces

and the Republic of Panama. The U.S. Southern Command was invited to send observers to the operation, which was conducted from 12 to 24 April 1966.

The exercise was planned as a counter-guerrilla operation. Its tactical phase took place in the rugged jungle area on the northern coast of Honduras from 21 through 23 April. Honduras furnished the aggressor forces, while all participating countries had units with the friendly forces.

Again, the friendly cooperation of participants in a training exercise, designed to make them collectively more capable of defending their homeland, was outstanding. But there were problems, and the mere fact that these problems were recognized made the training operation a success.[12]

At the critique subsequent to the exercise, comments made by umpires and other officials were rough, direct, and honest.[13] The COPECODECA staff and participating units accepted them with good grace. As they started planning their next exercise, Operation Nicarao, they kept the recommendations made at the critique of Operation Central America in mind.

Operation Nicarao

Planning for Operation Nicarao was started in 1966. It was scheduled and postponed two times. Not until the last minute

Central American troops wait to board Combined Air Forces C-130 to return home from Operation Nicarao.

was it certain that troops already committed by some countries could participate because of problems at home. But in the end, Operation Nicarao was held. Honduras sent observers and controllers while El Salvador, Guatemala, Nicaragua, and the United States sent observers, controllers, *and* troops.

Colonel Jorge H. Hernandez M., first president of COPECODECA and presently chief delegate from Guatemala, commented during a luncheon at USSOUTHCOM headquarters in May 1968 that "Operation Nicarao was a success for us [Central Americans]. If for no other reason, it was a success for the fact that it was held."

From the beginning, CONDECA had invited USSOUTHCOM to participate actively in the planning and conduct of the exercise. The rapport and general good will established between USSOUTHCOM officers and the COPECODECA staff was sufficient to make U.S. participation worthwhile, even if the exercise had been canceled.

Operation Nicarao was an example of international cooperation in troop training for regional defense. For example, the aggressor

Operation Nicarao "guerrillas" terrorized the Waspan area until suppressed by the defense forces.

forces were composed of elements of the Nicaraguan National Guard and U.S. Army 8th Special Forces troops. The airborne troops consisted of El Salvadoreans and Guatemalans, jumping from the same aircraft under orders of the same commanders. The naval forces were composed of elements from the U.S. Naval Forces Southern Command and Nicaragua, and the combined exercise air force was composed of elements from El Salvador, Guatemala, Nicaragua, and the United States Air Forces, Southern Command.

On D-day (1 April) Operation Nicarao forces, under the command of Colonel Adrian Gross from Nicaragua, made two assaults in the Puerto Cabezas area. A beachhead was established by amphibious forces on the coast south of town, and the guerrillas were rapidly pushed back into the town where there were pockets of resistance until D + 3. Also, airborne troops parachuted into an area near the Puerto Cabezas airfield and quickly secured the airfield so reinforcements could be landed by C-130 aircraft.

By the morning of 2 April the Puerto Cabezas area was declared secure, with only "mop up" operations yet under way. A motorized force had weathered a guerrilla attack while traveling through the center of the town and was on its way toward Waspan, another area of heavy guerrilla activity.

In the meantime a simulated drop of airborne troops was made near the Waspan airfield. Shortly afterwards C-130s landed infantry troops on the airstrip, and the guerrillas were forced into the countryside. By the third day of the exercise the motorized force from Waspan and the forces landed at Waspan had effectively eradicated the threat there, with the help of local people who had been terrorized by the guerrillas. The countryside was secure; pockets of resistance in Waspan had been cleared up. The training was over.

The threat to Nicaragua and the rest of Central America was wiped out—by a cooperative effort on the part of nations working hard to make joint efforts for regional progress (like CONDECA and the Central American Common Market) succeed.

The Central American Defense Council's

objectives for Operation Nicarao were attained. It provided training to members of the Central American armed and public security forces in the conduct of joint/combined counterinsurgency operations to include amphibious, airborne, and airlanded operations in towns, villages, open areas, and jungles. It developed standard staff procedures and common Spanish terminology for waging combat. It demonstrated CONDECA's ability to conduct counterinsurgency operations and fostered the spirit of cooperation among the Central American countries.

Problems were encountered that had not been met in previous exercises, and these were duly noted for correction in later operations. In general, however, the exercise was considered a decided improvement over Operation Central America.

Participating USSOUTHCOM commands were unanimous in calling the exercise a success. The U.S. Army (USARSO) stated that ". . . considering the problems involved and the overall objectives of the Operation, the USARSO rating would be excellent. It is recommended that future exericses of this type be conducted."[14] The U.S. Navy (USNAVSO) noted that ". . . excellent results achieved in the naval portion of Operation Nicarao were a direct credit to the versatility and cooperation of all participants."[15] The U.S. Air Force (USAFSO) concluded that the exercise was "unquestionably a success in the broad sense. It provided invaluable experience in staff planning and execution never before experienced by our Central American counterparts."[16]

Only a few weeks after Nicarao, COPECODECA was participating in Operation Halcon Vista 1968 and planning for Halcon Vista 1969. A command post exercise, known as CUS-

CATLAN, has been planned for 1969. Also, the staff works continuously on studies of defense doctrine, a Central American military education plan, a communications network, a combined air force, and other projects aimed at providing a better defense for their region.

Significantly, former members of COPECODECA's staff now hold other positions of importance, either in their own country or as representatives of their country to other Central American republics. Brigadier General Carlos Guzman Aguilar is now El Salvador's Chief of Staff of the Armed Forces. He was formerly chief of that republic's delegation to COPECODECA. Colonel Jose Cecilio Castro of Honduras, another former staff member, is now in El Salvador as his country's representative. What effect the former COPECODECA association of these two men will have, if any, on the border and fisheries disputes of the two republics remains to be seen, but they were affable and respected members of COPECODECA and it is difficult to see how this could harm relations between the two countries. As more and more COPECODECA-experienced officers attain new jobs of prominence, it is expected that CONDECA concepts will receive wider and wider acceptance.

It took many decades for the Central American republics to agree to unite. They still have their problems, and it takes time to get their plans, agreements, and recommendations ratified or otherwise approved by the various countries. The COPECODECA staff has demonstrated great patience. They work continuously ahead to the next problem, the next exercise, and the next study. They believe in the mission and purpose of CONDECA, and they are working together to make it a success.

Quarry Heights, Canal Zone

Notes

1. *Consejo de Defensa Centroamericana*, Guatemala, Centroamérica, April 1965, pp. 19–33.
2. *Ibid.*, p. 22.
3. Briefing presented at Conference on CONDECA at Headquarters USSOUTHCOM, July 1967, n.d., p. 1. Hereafter referred to as Briefing.
4. *Consejo de Defensa*, p. 23.
5. *Ibid.*, p. 24.
6. *Ibid.*, pp. 29–30.
7. *Ibid.*, p. 31.

8. Briefing, p. 4.
9. *Ibid.*, p. 4.
10. *Ibid.*, p. 6.
11. *Ibid.*, p. 7.
12. *Ibid.*, p. 8.
13 After Action Report prepared for COPECODECA, USSOUTHCOM, 31 May 1966.
14. Operation Nicarao Briefing, Hq USSOUTHCOM, May 1968, p. 18.
15. *Ibid.*, p. 21.
16. *Ibid.*, p. 27.

PROFESSIONAL MILITARY EDUCATION
IN THE LUFTWAFFE

Major William Bruenner

RECENT events have placed increased responsibility for the defense of Western Europe upon the Federal Republic of Germany. These events have included the French military withdrawal from NATO, past and programmed troop reductions in Germany by the Federal Republic's allies, and the U.S. military commitment to the conflict in Southeast Asia.

Both the leaders of the Federal Republic and the man in the street have accepted these additional defense responsibilities, although internal developments have had pronounced effects on German military planning. These developments include the passing of the "economic miracle" period, which has forced reductions in programmed military expenditures, and the aging of experienced World War II veterans who formed the nucleus of the German military forces during the reconstruction period that started in 1955.

Since the air force traditionally is the service branch requiring the most expensive and complicated weapon systems with the highest degree of immediate combat readiness, these developments, both internal and external, have affected the Luftwaffe. In particular, the declining number of officers with combat experience, a requirement for more effective utilization of limited financial, personnel, and equipment resources, and the concurrent increase in military responsibilities within NATO—all have combined to produce

a need for the most competent leadership. This need is reflected in recent trends in the professional military education of Luftwaffe officers. These developments should be of particular interest to the USAF officer who recognizes that his Luftwaffe counterpart represents the strongest continental European military force within NATO.
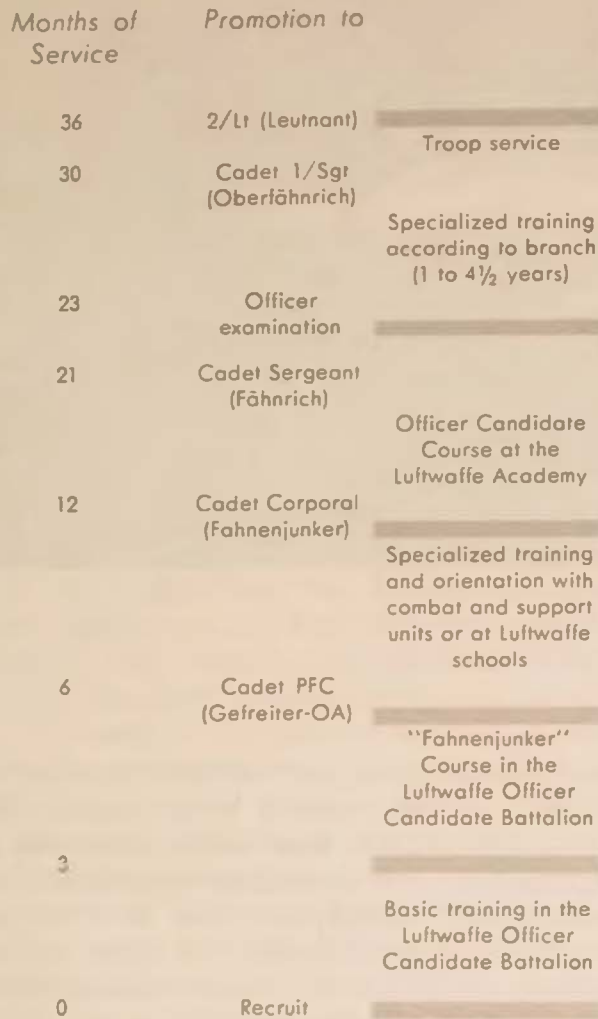
background

The changes within the Luftwaffe have evolved from factors based on German military and educational organization and tradition. Although there are provisions for the advancement of selected NCO's to officer status, the majority of Luftwaffe career officers enter the officer training course at 20 years of age upon completion of secondary school (Gymnasium). At that point they have completed 13 years of school and have passed a difficult final examination (Abitur). Only the top 8 percent of the German population in this age group reach this educational level. In terms of the American educational system, the average Luftwaffe officer candidate has completed the equivalent of two years of college upon entry into training leading to commissioning.

The three-year regular officer training course leading to a commission as second lieutenant involves the equivalent of progression through the enlisted ranks. (See accompanying table.) It also involves training and

Luftwaffe Regular Officer Candidate Commissioning Program

Months of Service	Promotion to	
36	2/Lt (Leutnant)	Troop service
30	Cadet 1/Sgt (Oberfähnrich)	Specialized training according to branch (1 to 4½ years)
23	Officer examination	
21	Cadet Sergeant (Fähnrich)	Officer Candidate Course at the Luftwaffe Academy
12	Cadet Corporal (Fahnenjunker)	Specialized training and orientation with combat and support units or at Luftwaffe schools
6	Cadet PFC (Gefreiter-OA)	"Fahnenjunker" Course in the Luftwaffe Officer Candidate Battalion
3		Basic training in the Luftwaffe Officer Candidate Battalion
0	Recruit	

courses at a number of schools and some service with units in the field. Technical training commences prior to commissioning and continues for varying periods afterward, depending on the specialty. While this provides an excellent training program for commissioning, it does not include sufficient academic study to give the young Luftwaffe officer the equivalent of the American college baccalaureate degree, such as the U.S. Air Force Academy grants. This factor has assumed greater importance with the increased sophistication of air weapon systems, command and control methods, and the corresponding staff functions.

While about 15 percent of usaf's personnel are officers, only 7 percent of the Luftwaffe's current total strength of 97,000 men are in the officer ranks. This variance is a reflection of some fundamental differences in leadership philosophy. For example, not all the Luftwaffe's pilots are officers. The statistics for officer versus nco pilots are as follows:

Aircraft	*Officer Pilots*	*NCO Pilots*
F-104G	66%	34%
G-91	50%	50%
Prop aircraft	50%	50%
Helicopters	35%	65%

The assignment of antiaircraft and missile systems such as Nike Hercules, Hawk, and Pershing to the Luftwaffe, rather than the German Army, has helped to keep the percentage of officers low, since nonflying weapon systems ordinarily do not require the high proportion of officers found in flying units. Furthermore, many of the Luftwaffe's 6500 officers are serving limited tours of 4 to 15 years. Thus the relatively low input of career officers has made it possible to avoid severe career progression problems as the force matures. On the other hand, this system places great responsibility in the hands of the individual Luftwaffe officer. This is apparent in a comparison of the organization and functions of higher usaf and Luftwaffe staffs. The Luftwaffe staff officer at the working level (captain through lieutenant colonel) must be able to work with considerably less supervision than his usaf counterpart. Preparation for such staff duty requires more emphasis on professional military education.

The weapon systems used by the Luftwaffe in the 1955–60 period included the F-84F, F-86K, RF-84F, and Nike Ajax. The U.S. forces had acquired considerable prior experience in the operation of these systems, which was passed on through American advisers assigned to German units and by the training of German personnel in the United States. Thus it was possible to minimize the effects of the 1945–55 gap, when no German military establishment existed.

The second-generation weapon systems were intended to provide the Luftwaffe the
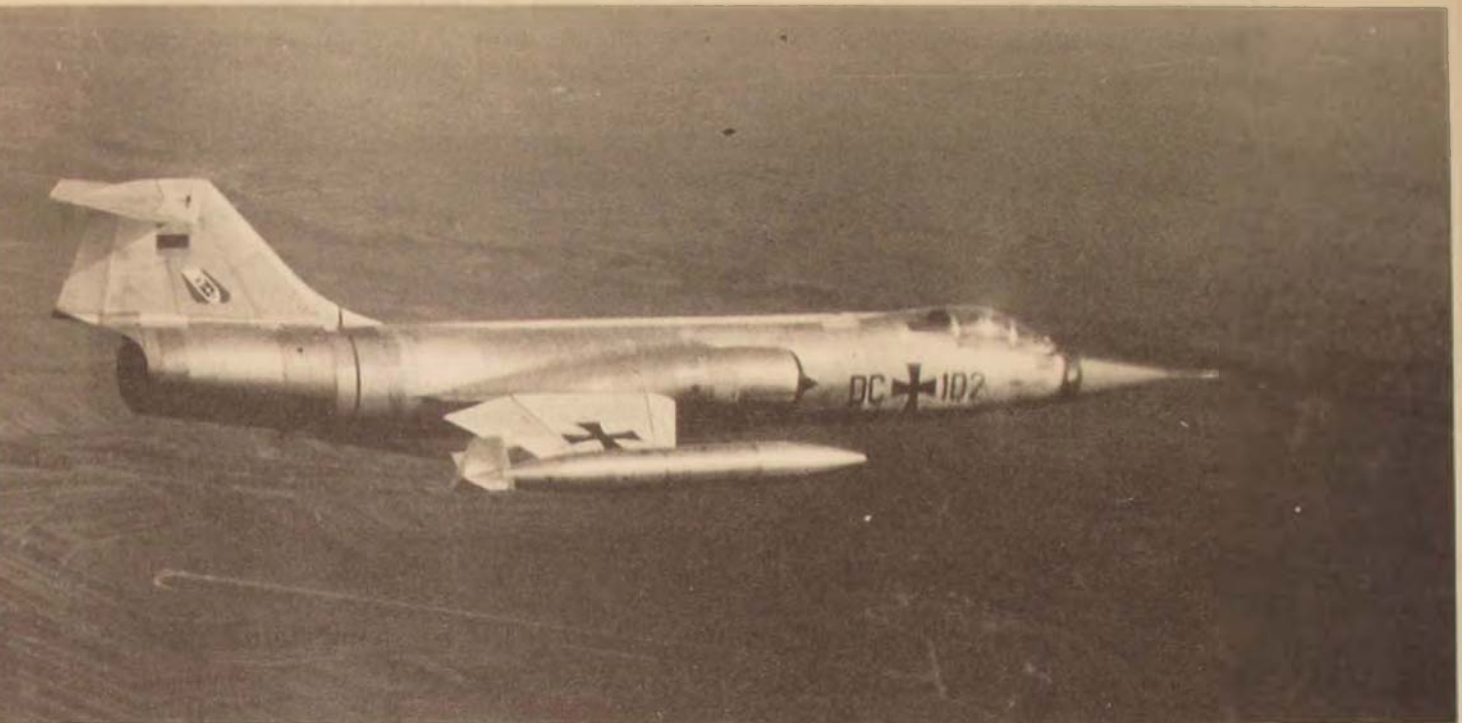
The Luftwaffe employs the Lockheed-designed F-104G as its main strike aircraft, for reconnaissance, and as an air defense interceptor. . . . The G91, of Italian Fiat design, performs effectively in the ground support role.

most modern weapons available, such as the F-104G. These systems were considerably more sophisticated than earlier ones and required the most up-to-date operational and management techniques. Thus it is not surprising that the integration of these weapon systems into the force initially imposed severe strains on the Luftwaffe.

The Federal Republic did not re-establish the German General Staff officer corps, which was dissolved in 1945. Nevertheless, because of tradition and the structure of the German military establishment, there is a requirement for selected officers in all services to perform general staff duties. General staff assignment in the Luftwaffe is limited to officers who have completed the two-year course of study at the German Armed Forces Staff College and have subsequently completed at least four months of duty in a general staff position. The importance of general staff officer status within the German military establishment can be judged by a number of factors. General staff officers wear distinctive uniforms, and faster

advancement within the officer ranks often takes them further in their careers than their line counterparts. General staff positions are not restricted to the headquarters staff in Bonn or similar levels; there are general staff positions at all echelons above wing level. These positions do not involve command duties—the traditional ideal general staff officer advises the commander and ensures that all staff functions are performed smoothly and efficiently.

recent trends

In order to attract the best-qualified individuals for officer careers in the highly competitive market for the relatively few young Germans who have completed the Abitur, the Luftwaffe has readjusted the commissioned service time requirements for promotion. Advancement to first lieutenant remains no earlier than the 2½-year commissioned service point. Promotion to captain occurs at the 7-year commissioned service mark for nonflyers (minimum age 27 years) and as much as 2 years earlier for pilots. Normally, promotion to major comes after 12 years' commissioned service, but some pilots are advanced as early as the 9-year mark.

Technical training continues throughout the career of the commissioned officer, depending on his specialty. Professional military education, however, is adjusted to correspond to the force structure of the professional officer corps.

Currently the initial step on the professional military education progression ladder is the Luftwaffe Field Grade Officer and Selection Course. This starts in the sixth year of commissioned service, with the dual purpose of determining the officer's qualification for promotion to major and preselecting officers for general staff training. This course covers a two-year period and includes both formal classroom instruction and correspondence assignments while still assigned to a unit in the field. It is concluded with five weeks of instruction at the Luftwaffe Academy and a qualifying examination.

Based on the results of this course, about 85 percent of the participants are considered eligible for promotion to field grade. The top 20 percent undergo a series of further tests and interviews; about half of these (24 each year) are picked to attend the two-year course at the German Armed Forces Staff College in Hamburg. The curriculum there includes:

	Percentage of curriculum time
Military science	9.1
Science and technology	15.8
Land, sea, and air warfare	20.1
Command and staff subjects	21.2
General education (languages, thesis, sports, trips, etc.)	33.8

By comparison with corresponding USAF courses (e.g., Air Command and Staff College), it can be seen that much greater emphasis is placed on academic subjects, so as to provide the graduate with a formal educational level roughly equivalent to that of the American college graduate. Recently heavier curriculum emphasis has been placed on advanced management techniques and operations research methods, in an effort to provide the expertise that the Luftwaffe leadership will need for management of the weapon systems of the 1970s. Joint instruction with army and navy students is presented in 18.3 percent of the curriculum. All students who were not promoted previously are advanced to major upon completion of this course.

The remaining 75 percent of field-grade eligibles attend three-month Luftwaffe staff officer courses. These are being phased out in favor of a joint five-month course to be given at the Federal Field Grade Officers School in Hamburg. These officers are eligible for promotion upon recommendation of their supervisors and a minimum of 4 months' service in a position calling for a major.

The German Armed Forces Staff College provides courses for Luftwaffe colonels and lieutenant colonels slated for group-level or higher command positions and also provides for the continued upgrading of all general staff officers through short resident courses and correspondence.

The German military structure emphasizes

Luftwaffe
Missile Defense

The Pershing surface-to-surface ballistic missile gives the Luftwaffe the high mobility required for quick reaction capability against any threat from close physical proximity. . . . Its mobile launcher makes it an elusive target; with its range and a nuclear warhead, it commands much respect.
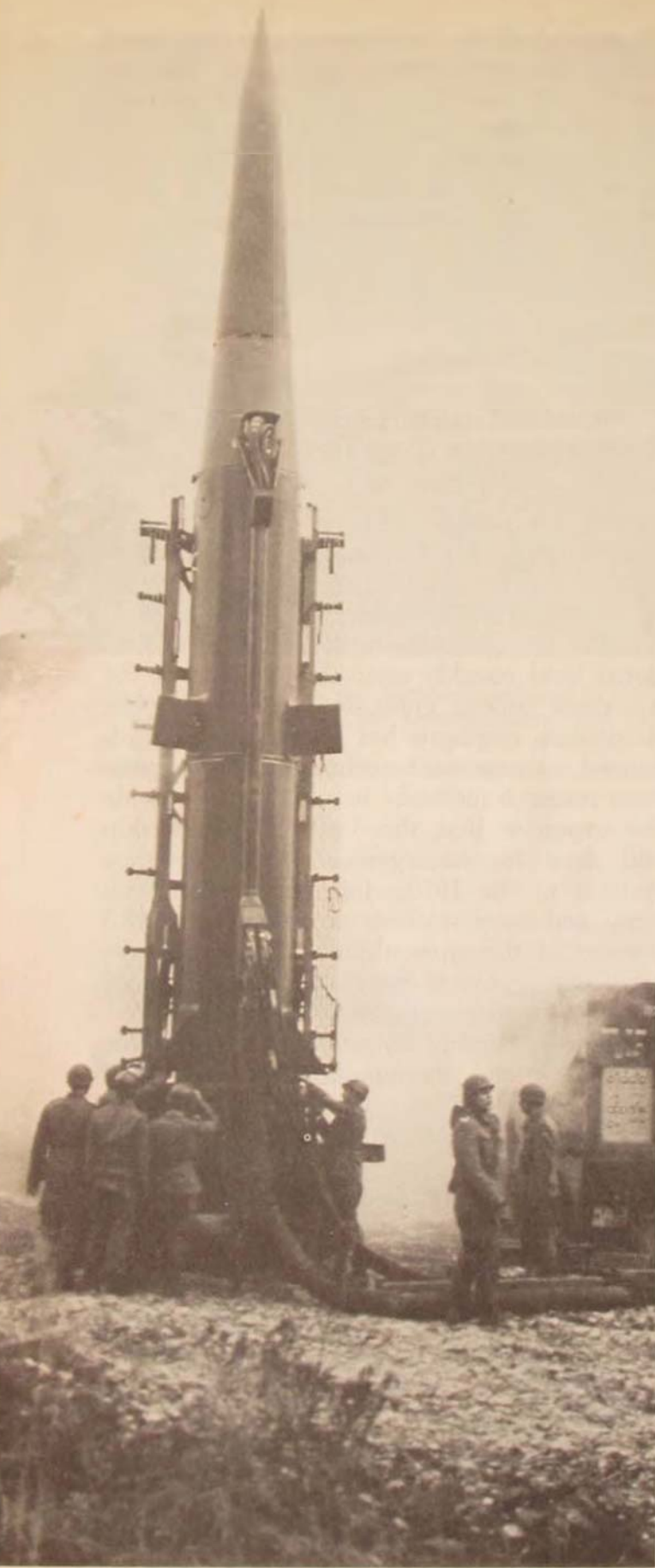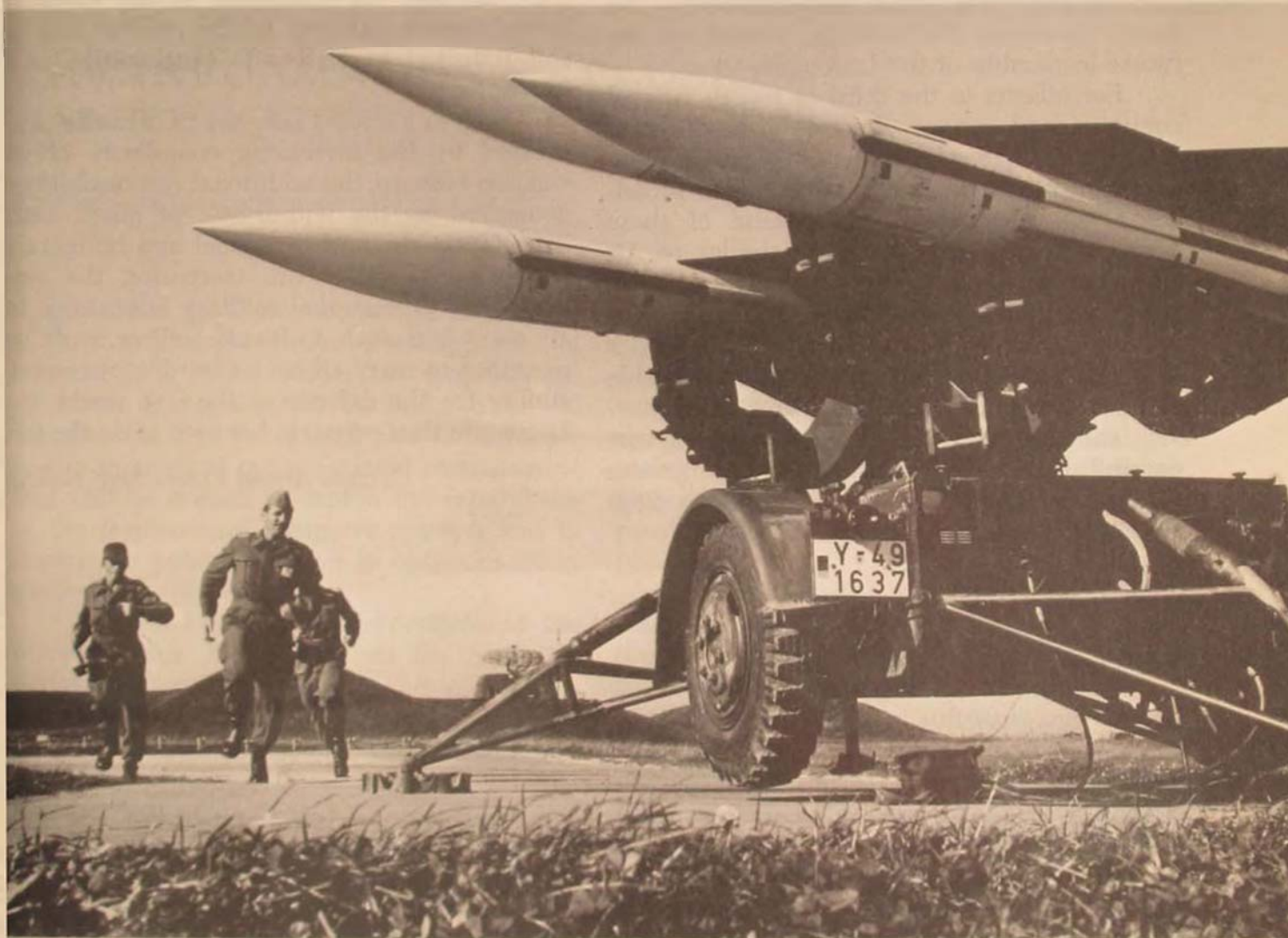
Nike Hercules surface-to-air missiles are the backbone of the Luftwaffe's defenses against hostile aircraft operating at high altitudes.

Hawk surface-to-air missiles (left and below), designed to combat hostile aircraft operating at low and medium altitudes, are deployed so as to maximize their effectiveness within the NATO defense arena.

joint instruction at all levels. This not only is cheaper than the establishment of separate service courses but also helps in the conduct of joint operations, thus overcoming one of the problem areas of German World War II military operations.

the future

The Luftwaffe plans to place heavier emphasis on the professional military education of its career officers in the future, to the extent that financial and personnel considerations will permit. This is in recognition of the heavy demands that will be placed on the future leadership of the Luftwaffe.

For officers in the third or fourth year of commissioned service, the establishment of a five-month Federal Junior Officers Training Course is planned, with the objective of broadening the educational background of these young officers. This would be similar to Air University's Squadron Officer School, with greater emphasis on academic subjects.

Some senior officers will attend a six-week Joint Defense Course, at a level comparable to that of the U.S. National War College.

The Luftwaffe is also investigating the possibility of supplementing the commander courses at the German Armed Forces Staff College with nonresident courses similar to those of the U.S. Air War College and Industrial College of the Armed Forces. In this way the Luftwaffe is trying to use USAF experience in professional military education for the benefit of its career officers.

PROFESSIONAL military education as we know it today was founded by General Gerhard Johann David von Scharnhorst in 1810 with the establishment of what was later designated the Prussian War Academy in Berlin. The tradition has continued in the German armed forces right up to the present and is still reflected in Luftwaffe organization and functions.

Today's leaders of the Luftwaffe are pressed by the increasing complexity of its weapon systems, the additional responsibilities generated by the withdrawal of allied units from Germany, and personnel and budgetary problems. Yet they are increasing the emphasis on professional military education. In an era when each Luftwaffe officer must be prepared to carry a heavier burden of responsibility for the defense of the free world, the Luftwaffe thus prepares her own to do the job.

German Armed Forces Staff College

In My Opinion
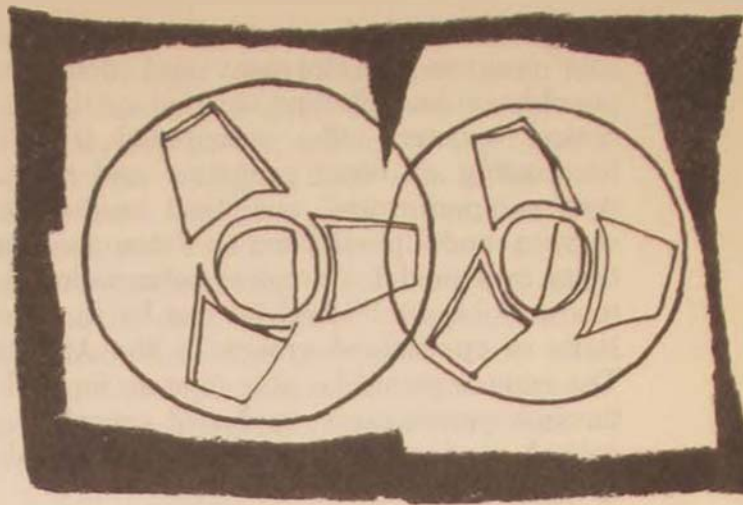
THE INFORMATION EXPLOSION—
CAN THE AIR STAFF HANDLE IT?

Lieutenant Colonel Lewis M. Jamison

AS THE Air Force begins its move into the third generation of computers and beyond, it is still a leader in computer application. It remains to be seen, however, whether the Air Force will also be a leader in the innovative organizational management that will be needed to exploit the capabilities of the forthcoming computer systems and to realize the potential power in optimum information management.

The Air Force, like corporations in the private sector, has recognized the organizational problems generated by the information explosion and the need to handle and use information more efficiently. The crucial issues seem to be how to streamline the functional alignment in organizations so as to fulfill best the planning, directing, controlling, auditing, and feedback processes; what information should be provided to the decision-makers; and who should control the information systems.

These problems confront the Air Staff in Headquarters USAF, The Pentagon. The Air Staff is the focal point for 22 major subordinate organizations that control 276 air bases in the United States and overseas, all possessing electronic data-processing equipment capable of transmitting data to Washington via the Automatic Digital Information Network (AUTODIN). From this and other data, the Data Services Center in the Pentagon maintains a data bank of 70 million records, from which it generates for the Air Staff approximately 6000 recurring and special reports per year.

The Air Staff hopes to double current computer capability. The capability being sought includes a main core memory of at least 500,000 alphabetic characters (exclusive of permanently resident software and working storage) and a low-speed immediate-access storage (IAS) of approximately one billion characters. Also wanted is the capability to expand the IAS to ten billion characters.

The new computers eventually should provide immediate on-line service to high-priority functions while simultaneously processing batch data. The on-line services anticipated include maintenance and updating of data files, document storage and retrieval, inquiry of data files from remote positions by keyboard consoles or cathode-ray tube consoles with light-gun actuators, generalized mathe-

matical and logical computation, remote console program development and debugging, possibly on-line plotting, textual editing, and optical scanners. Also anticipated is ability for costing of force programs and weapon systems, performing analytical studies, and varying model parameters to determine sensitivity in a model. Complete information centers may be established for use by functional staffs or specialized groups in the Air Staff. The centers would be able to store input data through punch cards, keyboard consoles, and optical readers and provide visual displays and print-outs of data.

Still to be resolved throughout the computer community are problems concerning the security of classified information,[1] which requires protection of computer equipment, transmission lines to remote equipment, and the remote equipment itself. These problems are manageable, simply requiring research and development to resolve.

A very real and unresolved challenge to the Air Staff is the development of a management system that can cope with the coming information glut. Compounding the problem are the complexity and variety of its administrative procedures. Correspondence from the Air Staff to higher echelons may go through two channels, one through the Joint Chiefs of Staff (JCS) and the other through the Secretary of the Air Force. The JCS channel is normally used for matters concerning strategic and joint logistics planning, the direction of the armed forces, and materiel and personnel review. Internal Air Force matters go through the Secretarial channel. Many times, correspondence concerning strategic planning, major weapons selection, and force composition is submitted through both channels. Administratively, dual submission is difficult because the information formats and processes are different for each channel.

Another complex set of Air Staff functions is the planning, programming, and budgeting of forces for the Department of Defense Five Year Defense Plan (FYDP), the processing of necessary changes to the plan, and the reallocating of resources within the plan throughout the year. Two Deputy Chiefs of Staff (DCS)

and the Comptroller are each responsible for some of these functions. The DCS Plans and Operations (P&O) is responsible for developing the USAF Objective Force, preparing the Air Staff position on the Joint Strategic Operations Plan (submitted through the JCS channel), and preparing the Air Staff position on the Secretary of Defense's Draft Presidential Memoranda (DPM). The latter, submitted through JCS and Secretarial channels, provide the foundation for the Five Year Defense Plan. If a force planning decision affects a substantial segment of Air Force resources, as with deployments to Vietnam, the DCS Programs and Resources (P&R) conducts an Air Staff exercise. An exercise involves much of the Air Staff in developing the optimum use of programmed resources, including feasibility testing of force projections. The DCS P&R is also responsible for the Program Change Requests (PCR) that change the FYDP. The Comptroller provides costing data for planning forces and constructing budgets.

This maze of functional responsibilities and administrative processes exists throughout the Air Staff. To overcome revered old procedures, sometimes a good approach is to develop an ideal organizational model and then do what one can with an old organization to approximate it.

Developing a Model Organization

Is there a decision-maker alive who would not like to have a full spectrum of alternatives presented to him with such complete and accurate data that he had no question as to what his decision should be? Would he not also like to know that his decision involved absolutely no risk and that every possible outcome would produce optimum results? Of course this utopian situation is rather unrealistic. Toward that end, however, an organization can strive to use constructively the maximum possible information, including predictive knowledge, to produce for its decision-makers alternatives that include optimum solutions with minimum, acceptable risks.

A model organization needs an information system that provides adequate, accurate, and synthesized data to the proper decision-maker in the least time consistent with the subject matter. This ability should include responding to queries by the decision-maker with immediate information or with an estimate of the cost of additional information. Once a decision is made, the organization should have the mechanism to ensure execution, to audit the result achieved against the results desired, and, if adjustment to a previous decision is needed, to provide the necessary information to the decision-maker for an adjustment decision.

Needed information should be readily available to the staff and decision-makers with minimum manipulation en route.

Toward this end, Chris Argyris has set forth the merits of what has been termed a matrix organization. Functions are matched against project teams so that experts from various functions are combined to work on specific projects for the life of the project. Argyris emphasized that "a matrix organization is designed less around power and more around who has the relevant information."

Organizations currently use this system in the form of formal and ad hoc committees but may not have exploited its full potential. Therefore, it is an aspect of management that may be profitably investigated in the effort to improve information management.

To combine these criteria, an ideal organization might be structured like a pyramid divided into three horizontal layers, as shown in Figure 1. The bottom layer would consist of the personnel and facilities required to provide a common data base for the organization. The middle or second layer would consist of the personnel who analyze and synthesize data for presentation to decision-makers. The top or third layer would be the decision-makers.

A common data base has significant advantages. A major one is free access by all staff agencies to the data they need without duplicating these data in individual staff agency storage programs. Elimination of duplication would mean large savings in the cost

of storage systems and greater accuracy in the data. Budget developers and programmers, for example, require the same information to develop cost schedules and programs for fiscal year budgets. Each should be able to draw from the same data input. But, because each staff function has different requirements for manipulating the same data, each may need its own computer program and in all likelihood should be responsible for its own.

To avoid duplication and insure accuracy in the data bank, a single manager of the common data base becomes almost essential. In the actual handling of basic input data, a single manager would have an advantage in standardizing input procedure to gain maximum accuracy. For example, he would acquire data directly from the originator when possible and see that it was manipulated as little as possible when it was inserted. On the output side, a single manager would provide impartial service to all users. They would be able to acquire and structure data as they

Figure 1. A model organization
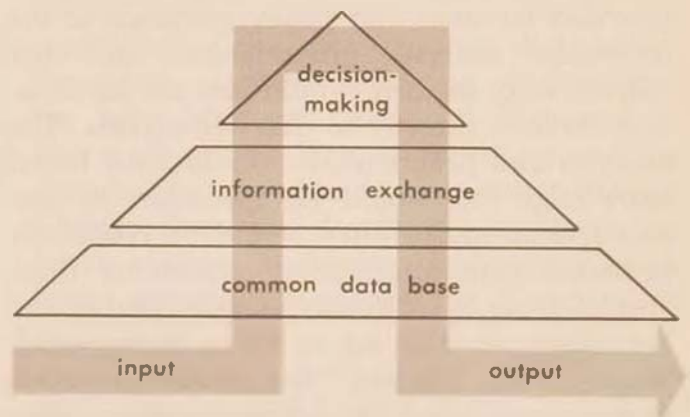
wished and not have to extract data from reports provided by function-oriented agencies. Information releasable to only a few people or which requires the explanation of the input agency would have to be specially handled. It could be marked and withheld by the computer or presented with a qualifying statement

on the print-out or display, as appropriate.

Raw data improperly used may be misleading and dangerous. It may be argued that the originator, or the staff most cognizant of the originator's intent, should handle the information, or at least approve the use of the information—in other words, have proprietorship. On the other hand, the interim handling of information between originator and user can lead to inaccuracy through misinterpretation, inflexibility, and control of information for reasons of power. Therefore, so long as proper use of information can be ascertained, proprietorship of most information is undesirable.

The design of the middle layer for information exchange is critical. For better accuracy and more rapid transmission of information up and down, it is desirable for decision-makers to have direct access to the staff personnel involved in synthesizing and presenting data. This capability means reducing, or eliminating, layers of reviewers and "no-sayers" that develop in large organizations.

It is also necessary for the middle layer to be administered and for all its parts to be fully responsive to the demands of the decision-makers and staff project officers. This layer provides facilities and policy guidance to the individual analysts, programmers, and staff officers who, in turn, would provide information services directly to decision-makers. The analysts and programmers would have broad knowledge but would be specialists in certain special areas. They would be constantly provided with information concerning these special areas so as to stay knowledgeable and formulate views on the merits of their specialties.[3] In this manner, they would maintain their expertise and be able to provide service in their area of specialization to any client. They would also be prepared to assist in areas related to their own if the need arose.

A single manager of administration in this middle layer should be advantageous, but he would need assistance in coordinating the substantive matters confronting the organization. This function could fall to a group of "coordinators," staff officers who would form a thin layer at the top of the second layer. They would be responsible for integrating the requirements of the decision-makers and the capabilities of the staff. These personnel would have to be experienced in functional staff areas and understand programming and computer capability. Their responsibilities would be to:

1. Assign incoming correspondence and furnish guidance for staffing replies.

2. Assign analyst or programmer resources when necessary.

3. Extract from correspondence any critical issues for which previously established policy does not apply or is inadequate and upon which a proposed time-consuming analysis may depend. After a brief staffing of the issues, the matter would be referred to appropriate decision-makers for a guidance decision. If the matter is too complex or the information available is inadequate for a decision at that time, decision-makers can note the problem, know that the need to decide is forthcoming, and possibly establish parameters or constraints for the staff to use in analyzing the issues.

4. Review staff proposals for adequacy and consistency with policy and refer the proposal to decision-makers.

5. Codify decisions periodically to provide guidance to analysts, programmers, and staff officers.

The ultimate purpose of the middle layer with the coordinator system, is to provide staff personnel the data and guidance needed to prepare for a decision-maker a product that is comprehensive, accurate, and consistent with policy without innumerable correspondence reviews at intermediate levels.

The top or third layer, consisting of decision-makers, might best be a blend of a simple hierarchy crosshatched with a formal matrix system of organization. Within the hierarchy, the staff should be functionally aligned to fit the goals of the organization. Almost without regard for the type of organization, the principal functions of planning, executing, and auditing should each be distinct and overlap as little as possible. A hierarchy of functional staffs should permit more rapid decision-making for the more general

single-function issues. The matrix system, on the other hand, should provide a means to bring the specialized expertise of a number of decision-makers to bear on multifunctional issues.

Adaptation of the Air Staff to the Model Organization

The Air Staff has many of the characteristics of the model organization discussed. It has a hierarchy of decision-makers, it has the Air Council and Air Staff Board system comparable to a matrix organization for the consideration of multifunctional issues, and it uses the system of action officers who are responsible for specific correspondence and present their issues direct to the decision-makers. However, the Air Staff does not conform to the model in a number of ways, particularly in having multiple layers of superiors with only review authority from whom the action officers must receive approval before reaching decision-makers. It also does not have a common data base and lacks a single manager for the current information system.

If a three-layered organization were considered for the Air Staff, the following list of actions would be needed to align the Air Staff with the model:

1. Establish information centers responsible to provide action officers with rapid research assistance for every assignment and provide analytical and programming assistance on request.

2. Establish an information manager with management responsibility for:

a. a common data base with the computer resources of the Data Services Center, the USAF Command Post, and any other Air Staff agencies which may acquire computer facilities in the future;

b. information flow within the Air Staff with the authority, in coordination with the using agency, to establish input requirements and source responsibility, to consolidate standard output requirements, and to specify the information flow procedures within the Air Staff, including message traffic handling and written correspondence format, handling, filing, and disposition;

c. information centers and display and keyboard consoles in the Air Staff;

d. all unique programming and most of the analytical capability in Air Staff. For this function, the information manager would need the programmers and analysts now scattered throughout the Staff, with the exception of those analysts who have a decision-making role.

3. Establish an organization of coordinators with the functions previously outlined. Initially, each functional staff might adopt a system similar to the planners in DCS Plans and Operations. However, incoming as well as outgoing correspondence would be reviewed, a practice not normal with planners. Eventually, all coordinators might be consolidated to a greater extent in the organization.

4. Reassess the primary functions of the Air Staff and principal responses required of it and realign the decision-making layer to correspond with these. Two functions which warrant close attention are force planning and performance auditing. As previously discussed, force planning in the planning, programming, and budgeting system is badly splintered in the Air Staff. Consideration should be given to consolidating the staff agencies that perform the force planning functions of developing the Joint Strategic Objectives Plan and Air Force Objectives Plan, commenting on Draft Presidential Memoranda, processing Program Change Requests, developing the force program, costing, budgeting, and preparing the force posture statements for Congressional hearings.

Concerning performance auditing, the newly inaugurated Project PRIME, an accounting system to measure at unit level actual operating expenses versus planned expenses, is an indicator of the growing emphasis on quantitative measurement of performance in the mission support area. The measurement of mission accomplishment, however, has not been quantified so well and, as a result may suffer by comparison. Consolidation of performance auditing agencies in the Air Staff, except the Inspector General, into a single

functional staff might provide a more thorough and balanced assessment of total performance and a more precise and comprehensive feedback system for improving Air Force operations.

The day is approaching when the Air Staff will be in the paradoxical position of having too much information available for decision-making—unless it reorganizes. Time is running out on making an orderly and efficient realignment of the Air Staff. Breaking tradition by considering the adoption of a military organization that is not vertically oriented to personnel, intelligence, operations, logistics, and so on, is very difficult. But the penalties for not doing so in a complex decision-making environment can be inefficiency and the loss of power that good information can provide.

George AFB, California

Notes

1. For a comprehensive coverage of the problem, see articles in the section "Security and Privacy in Computer Systems," American Federation of Information Processing Societies, *Conference Proceedings*, Vol. XXX (1967 Spring Joint Computer Conference, Atlantic City, New Jersey) (Washington, D.C.: Thompson Book Company, 1967), pp. 279–300.

2. Chris Argyris, "How Tomorrow's Executive Will Make Decisions," *Think*, XXIII, 6 (November-December 1967), 22.

3. The design of an information system should consider the relationship between the maximum information that an action or decision point may absorb, use, or relay and the number of other points a single point may be responsible to or responsible for. For a concise discussion of communications restraints in organizational structures and the use of mathematical models for communications authority relationships, see James Farmer, *Decisions, Communication, and Organization* (Santa Monica, California: The RAND Corporation, 1961).

DISCIPLINE AND OFFICER TRAINING, CONFLICTING INTERESTS

Major Donald T. Sandler

OFFICER training today is an unhealthy combination of both traditional and contemporary concepts of discipline. Those holding to the more modern approaches have had an influence on the academic aspects of the curriculum while the military portion of the training program bears the full imprint of those who advocate the more rigid traditional views. As a result officer training seems too much like an incongruous game to the students. It most certainly is not an accurate reflection of the duty for which it is supposedly preparing them. The students "play the game" in order to graduate. It is accepted

as a routine one must follow, an obstacle en route to a commission.

military vs. academic— traditional vs. contemporary

Officer training has made great strides in the past few years, but mostly in the academic aspects of the curriculum. We are much more concerned with what the student learns in the classroom than with what he learns in his total environment. Our action should be directed to *all* phases of the curriculum, since the graduate is a product of the whole school. To make him a product of a school within a school, or of two schools which appear to be at odds with one another, is to confuse him. This is exactly the case, and an examination of the military aspects of the curriculum will bear this out.

Which approach to discipline insists that the second button only be buttoned on his 1505s and the top button only on all other clothing in the closet? The trainee wonders if it is important. He wonders about other restrictions and wants to know why they are part of a precommissioning program. "Trousers will be hung so that the belt line and bottom edge of trousers' legs are even. The fly will be unzipped and facing the locker door." Those adhering to the more traditional concepts of discipline still think this rigid approach to closet arrangement (along with keeping like items together and facing the same way, etc.) makes a student a better officer. Many officers who have not challenged their own concepts of discipline routinely think that this is the thing to stress in all military training schools (*officer* training schools, too).

The student will always "play the game," but he may wonder why he must put a row of shoes on display under his bed. All this encourages is checking for straight lines, time-wasting spit shines, and tucked-in laces. What's more, shoes get dusty out there in the room where people walk. Reason suggests that shoes belong in the closet. The trainee knows this but accepts a double standard, one which he follows now (precommissioning) and one for later (postcommissioning).

Instead of relying on the older, more traditional concept of discipline, why not appeal to his intellect, treat him as we would like him to treat others, and let him display his clothing any way he pleases? If his uniform and shoes are in poor repair or not clean enough, he can easily correct this. An officer's appearance is important but not his closet's appearance. A contemporary view of discipline would be more realistic. Why "ground" a clock or an ashtray? Why *insist* that books be "taller tapped"? Why *demand* that the soap dish be so many centimeters from the razor blades? Why do socks *have to be* rolled a certain way? When the student asks these questions, he's usually told that things have to be standard so that the Air Force can be objective during inspections. To the reasoning student, this sounds like establishing a program which is designed only to perpetuate itself. He suspects that the USAF creates rules only to see if they are being followed.

Some would say that this standardized way of spacing things out evenly in a drawer helps us to be standard in our approach to other things. The traditional-discipline school sets great store by this transfer-of-training principle, but modern transfer theorists argue that it does not work quite so simply. They might question how we can expect creativity after commissioning, while imposing rigidity before commissioning. The training situation is the formative period. What students see in training all around them, what they live by each day, is what they take with them. Do we want them to march off with mind in step, thinking that the Air Force wants mechanical response to everyday problems? Do we want them to think, or to respond as a robot? What we *show* them counts—not what we *tell* them.

The officer's role has grown through the years, yet officer training has not grown fast enough. We speak about relevancy and modern leadership, but the "brown-shoe," "training-must-be-difficult" concepts linger on.

the total environment

Thus far I have cited a few rather obvious situations illustrating how we teach leadership

and instill an understanding of behavior in the academic phase of officer training while forcing some old-fashioned, inflexible practices upon the trainee via his military curriculum. It is indeed difficult for the student to reconcile the reason with the rote. When pressed for a reasonable excuse for what we impose on our students, we often stumble, hesitate, and offer one of the old but hardy justifications such as "It builds discipline" or "We must develop an appreciation for detail." To each of these explanations, reason would suggest that we are kidding ourselves.

The mechanical situations are not nearly so important as the whole conflicting image of officer behavior we seem to present. Early in the program students are generally greeted with some such statement as "Welcome to an honorable profession. You are about to join an officer corps. We'll treat you as officers." Then they are subjected to young and rather rigid upper-class leaders. Whereas permissive, psychologically oriented leadership is stressed in seminar rooms, authoritarian leadership gets the nod in the barracks and hallways. We hope to teach ideas such as developing pride in workmanship, encouraging creative thinking, making subordinates *want* to perform, learning their personal, psychosocial needs and designing work experiences to satisfy these needs. Yet this is not what they learn when they are berated for infractions of minor rules. They are not encouraged to appreciate the consequences of their actions. They just get the "good old-fashioned chewing-out." While this may be necessary for some students, it is discouraging and confusing to the others who expect to be treated as they are told to treat their subordinates. They wonder why these excellent principles of leadership apply only in studies or textbooks, and they wonder why the principles are not applied to *them*. Which leadership practices do students learn and take with them, those they hear of in class or those they are exposed to outside the classroom?

a disciplined force—an effective force

It may appear that I am advocating a free, open, liberal, democratic Air Force. Perhaps it sounds as if I am preaching an end to discipline, a blending of officer and airman. Not so! If, however, we continue to approach discipline as "chewing-out" for seemingly insignificant items, we are victims of routine thinking, and we severely handicap progressive training programs.

One of Webster's definitions of discipline is "training which corrects, molds, strengthens, or perfects." Another is "punishment; chastisement." While the former is no doubt one proper approach, many officers seem to think only of the latter. Webster goes further with discipline and states, "to develop by instruction and exercise." The word *develop* warrants attention. Another definition is "to train in self-control or obedience to given standards." I do not suggest a change in definition but a new approach to what are used as criteria. For example, let's continue to *train, mold, strengthen*, and *perfect*. But by what measures or criteria? Let's continue to *punish*, even to *chastise*. But for which offense and to what degree? Let's continue to *develop by instruction and exercise*. But what will we develop, and what procedures do we want trainees to practice and exercise? Let's continue to *train for self-control*, to demand *obedience to given standards*. But what shall we use as standards? Soap-dish placement? Closet arrangement?

Is the officer less disciplined if he is encouraged to use his intellect? It would appear so to those who think of discipline as forced compliance with routinely accepted standards, standards which make no sense *to the trainee*. The more modern approach would suggest that we develop more meaningful standards. Then we can be as firm in our "punishment" or "chastisement" as we feel is necessary. A "chewing-out" for breaches of *meaningful* standards is as necessary as ever. The officer so trained and so disciplined is better prepared for the complex establishment he serves. He will comply with demands made out of military necessity even though he finds no immediately apparent reason. When military requirements dictate, he will recognize the need for immediate response to commands. If we train him to use his mind, he will see this.

Instead, we seem to fear that he will not comply, that unless he has been trained to perform on cue with all of the usual drawer displays, he will not perform on cue for real and vital situations. Is there any real evidence for this?

a conflict of interest

The problem, then, lies in a conflict of interest of sorts. The conflict stems from different approaches to discipline, with the older, traditional views more prevalent, and manifests itself in the meaningless mechanical things required of trainees in dining halls, closets, etc., and, more important, in the very way we talk to them and lead them. It does not matter if there is no conflict in our minds; there is in the *student's* mind, and that is what counts.

Today's precommissioning students are different from those of five to ten years ago. They are not as willing to accept dogma. They want reasonable answers for performing in prescribed ways. They inquire about their rights to participate in strikes, demonstrations, political campaigns, etc. Given reasonable answers, they accept necessary circumscriptions; what they resent is the response which basically tells them "Because it just isn't done that way." Those students no longer accept the "moral imperatives" in military training situations. They think for themselves and should be better officers than those in the past. Given a reason for a principle, they will support it.

The general barracks routines and regimentation contribute more toward a student's concept of the Air Force than does his classroom work. Training courses project a conflicting image here, advocating permissive, psychologically oriented leadership on the one hand while inspiring rigid discipline and apparently meaningless procedures on the other. The modern student's sophistication will not allow him to accept an environmental training which he finds meaningless.

CONCEPTS of discipline influence one's approach to training. The more traditional concepts stressed immediate compliance and innate obedience. Training programs were therefore traditionally very rigid. Over the years the military has modified its approach, with many writers advocating a psychological approach to leadership and discipline. These writers reject the traditional view and stress flexibility and permissiveness in the training environment.

Today's officer training programs use a combination of the two approaches to discipline but with each view applied to a different area. The contemporary view prevails in academic programs while the traditional view prevails in the "out of class" military environment. The two approaches are contradictory, and today's sophisticated students find the traditional approach largely meaningless and unacceptable. If we are to improve training, we would best abandon the rigid, ritualistic approach that dominates officer training and show the students *in* training what we expect of them *after* training.

JUSMAG, Thailand

Books and Ideas

UNITED STATES POLICY IN ASIA

Lieutenant Colonel Norman D. Eaton

PERHAPS more than any event in our national experience the Vietnam war has caused observers from virtually all sectors of our society to hasten to draw conclusions from an ongoing and highly complex political-military operation. As a historian of sorts, aware of the revisionism which usually commences shortly after an event and which seems to continue indefinitely if the event is significant, I marvel at the tone of certainty in which conclusions regarding our involvement in Vietnam are already being voiced. It has been alleged, for example, that almost all current domestic woes have their roots in Vietnam;[1] that American character and society are being corrupted by "an arrogance of power"; that the United States is futilely trying to block China in an area that is her natural sphere of influence; that the domino theory is in fact a law; that the strategy of graduated response is totally discredited. (Concerning that strategy, I believe it has indeed been discredited, at least as it has been applied in Vietnam, piecemeal and in small increments. Had it been tested in a less permissive political and military environment, its failure might well have been disastrous.) It is not astonishing, in view of the length of time we have been tied down in Vietnam and the cost in lives and resources, that public discussion has tended to drift from objectivity into polemics.

There are, of course, some safe and obvious conclusions to be drawn from our present involvement in Southeast Asia. One of these—that all Americans, not just policymakers, need a better understanding of Asia and our relationship to that great area and mass of people—is the basic theme of Edwin O. Reischauer's recent book.† If this argument seems obvious to the military professional, it

has not been so, contends Mr. Reischauer, to most Americans, including in particular the professional educators, who have failed to give proper emphasis to studies of the Far East.

Our basic lack of understanding of Asia, says Mr. Reischauer, has led us to some unsound conclusions and generalizations and prevented us from perceiving, or at least from fully appreciating, some fundamental truths. In particular we have formulated Asian policy upon our knowledge of and experience in Europe and our evaluation (a correct one) of the post-World War II Communist threat in that area. But, continues the author, the Asian problem is not analogous to Europe. The problem in Asia is not to restore prosperity and stability; prosperity never existed, and stability was related to colonial or semicolonial status. Asian realities are change, quest for national identity, reaction against colonialism, and demand for a better life. While admitting that Communism has been successful in harnessing these factors, Mr. Reischauer is convinced that the Asian countries' demand for independence will prevent their falling under Chinese or Soviet domination. In particular Mr. Reischauer warns us against appearing to oppose Asian nationalism.

It is precisely in this framework that Mr. Reischauer condemns our deep involvement in Vietnam. In spite of his insistence, stated in the first sentence of the book, that "This is not a book about Vietnam," the author devotes the next forty pages directly to that subject as illustrative of the problem to which lack of knowledge and understanding lead. In short, Reischauer considers our military commitment in Vietnam to have been a mistake. Alarmed by what appeared to be a Communist threat to all of Southeast Asia, the United States made the serious blunder of supporting France in Indochina, thus aligning on the side of colonialism and against nationalism. Ho Chi Minh had already made himself the leader of the anticolonial movement, although, to be sure, his Communists were not the only anti-French faction. Mr. Reischauer further believes that the United States compounded its blunder by failing to support the Geneva agreement of 1954. He readily admits that the

1956 elections provided for in the agreement would have resulted in a unified and Communist Vietnam. But this would not necessarily have been a catastrophe, he argues. Ho would likely have been an Asian Tito, and Vietnam would have been a "dike" between China and the rest of Southeast Asia.

Mr. Reischauer does not, of course, suggest that we abandon Vietnam. We have placed on the line the prestige and reliability of the United States, a commitment he describes as "the most significant of all escalations." To fail to secure an honorable settlement would have the most serious international and domestic consequences. Thus, from among three possible courses of action— major escalation, a pull-out, or a continuation of military pressure and diplomatic initiative— Reischauer, like most Americans, favors the third.

Having used Vietnam as an illustration, the author proceeds to a definition and analysis of our Asian problem. After comparing the underdeveloped world (with emphasis on Asia but treating Japan as a special case) with the West in terms of populations and gross national products, Reischauer defines the bases for our interest in Asia: (1) since war and disorder are contagious in our unitary world, we must promote stability in Asia; (2) we have a moral imperative to help those who need help; (3) we have an important stake in the future Asia, when it will be important to our security and economic interests.

This last point requires further comment. While regarding the future Asia as very important to us, Mr. Reischauer states, "Clearly we have no vital national interests that can immediately and directly be threatened by Asians." The key words, of course, are "immediately" and "directly."

Having defined the problem, Mr. Reischauer conducts a *tour d'horizon* in Asia, dealing in specifics with two countries and one group of countries: Japan, China, and, in the third category, the rest of Asia. Japan receives special attention because of its unique position in Asia as a bastion of strength, vitality, and stability. China's special importance requires no comment. As to lumping the rest

of Asia—from Pakistan to Korea—together, the author admits that "It may seem somewhat cavalier. . . ." But this treatment is very much in keeping with the relatively small importance he assigns to these countries.

Mr. Reischauer's brief survey of Japanese political, social, and economic development and his estimate of Japan's importance to the United States are gems of clarity and insight. The reader should be prepared, however, in view of the author's long years of experience and service in Japan* and the normal tendency to sympathize with one's host country, to be particularly critical of remarks such as "Japan's future and our relationship with it are of much greater long-range importance to us than anything else in the vast area on the other side of the Pacific."

Were it necessary to establish an order of importance with respect to our relations with Asian countries, I suppose I would not take issue with Mr. Reischauer's evaluation, except in reference to the military role he would assign to Japan and, by inference, all medium and small powers:

> The world already has such a military balance of terror between the two great powers that the military strength of other countries has relatively little bearing on the world balance of power and becomes a matter of only localized significance. It is hard to see what advantage it would be to Japan to greatly increase its military power—as long as the United States continues to maintain a stabilizing military presence in the Western Pacific.

Here the author seems to be saying that military power as it affects a regional balance is unimportant. I cannot agree with this view. Regional balances cannot neatly be separated from the world balance. Moreover, a postwar policy of the United States, and in general a successful one, has been to promote stability through regional arrangements. Furthermore, the author would seem to concede to the United States and the Soviet Union the roles of gendarmes of the world at a time when these two giants find it increasingly difficult to influence even their own allies. Military nakedness in a multipolar world does not make sense for a power like Japan.

Military considerations aside, we can agree with the author that Japan should play an important part in Asian development through furnishing economic and technical aid. And we can take comfort in Mr. Reischauer's confidence that the United States and Japan will remain on close and friendly terms, that our security treaty will be renewed, and that the Okinawa question will be solved.

Turning to China, Mr. Reischauer sees an unstable, frustrated, and xenophobic giant but one whose near-term importance and power we have overestimated. China's present weakness makes major military adventures impossible. The real threat is the support and promotion of insurgency. The author finds containment of China to be a sound policy but argues that nonrecognition is no longer productive. He sees us moving slowly toward a more realistic stance: "containment without isolation." He believes Japan has an important role in educating China and helping her achieve a normal relationship with the world.

In a section dealing with the rest of Asia, Reischauer re-emphasizes the relatively low importance these countries have to the United States. The thrust of his argument is to avoid getting deeply committed to these myriad unstable and weak countries. Promote stability through aid and advice (including military advice, in some cases, being careful not to let the advisory role escalate into participation in military operations). We should not try to prop up the unproppable, we should retain flexibility, and we should play hard to get.[3]

Also in this section, Reischauer takes a final glance at Vietnam (two percent of the smallest third of Asia, he reminds us), sketches out the kind of settlement that would be satisfactory, and suggests how it might be attained. While he is more conciliatory than our official policy has been (at least until the President's announcement of 31 October 1968), he proposes nothing really new.

In the final chapter Mr. Reischauer outlines measures to improve our policy-making performance in Asia. In terms which might describe the perfect air staff, he calls for machinery capable of integrating specialized knowledge with broad understanding, thence

arriving at a fully coordinated position. Required are more money, more personnel, and new concepts of diplomacy, adapted to the problems of communicating with peoples, not just their governments.

In a closing passage the author calls for reforms in the teaching of history. Most Americans, Reischauer insists, are exposed to a mere smattering of Far Eastern history, and even that is presented so as to prove the superiority of Western civilization. He is right about this, but the Air Force and the Army can take pride in having been leaders in correcting the deficiency. The United States Military Academy, at least since about 1945, and the Air Force Academy from the beginning have taught as separate and required courses the history of the Far East.

By embracing such a wide area of lands, peoples, and problems, this book exposes itself to attack from many directions. In spite of that, few flaws can be found.

Mr. Reischauer's views on Vietnam will most certainly pique the hawkish reader. But as the author insists, the book is not about Vietnam. Whatever the reader's views, he will have to admit that the Vietnam issue is a good introduction to the author's main points. Moreover, military professionals should find no contradiction in giving complete and wholehearted support to the war while at the same time giving careful consideration to and making their private evaluation of the costs of the war in relation to the objectives. For example, research and development and the acquisition of badly needed new weapon systems have been affected by shortage of funds. It has been estimated that after the Vietnam war is over,

$15 billion will be required just to replace stocks and equipment. Certainly, and perhaps more important, our flexibility to respond to crises elsewhere has been degraded.

One might fault the author on some small points. For example, he suggests a barrier extending into Laos to "seal off" North Vietnam from the south. A barrier, however, is not an impermeable membrane. The Laotian sector of such a barrier would necessitate the deployment of ground forces in that country, a requirement which Mr. Reischauer seems not to appreciate and certainly would not support.

A more serious criticism may be that the author, in his effort to emphasize Asia's importance, has failed to relate events in Asia to the world balance of power. Dr. Robert Strausz-Hupé's recent article[4] is worth considering in this framework. Strausz-Hupé argues that the Vietnam struggle can accurately be viewed only as a part of the global conflict between the United States and the Soviet Union and that the credibility of American strategic power, and thus world stability, is at stake. In any case, what we do in Southeast Asia, in Korea, in Taiwan, and elsewhere within that "smallest third" of Asia certainly is not to be decided by Asian considerations alone.

Few Americans have served their country as well as Mr. Reischauer and perhaps none has been so respected in the foreign land in which he lived. This outstanding book, written in a clear and dignified style and devoid of the sarcasm and polemics now so often used in connection with policies under criticism, can only add to the author's reputation.

Phan Rang Air Base, Republic of Vietnam

Notes

1. Arthur M. Schlesinger, Jr., *The Bitter Heritage, Vietnam and American Democracy 1941–1946* (Boston: Houghton Mifflin Company, 1967), p. 50.
2. Mr. Reischauer was born in Japan in 1910 and lived there until 1927. He was United States Ambassador to Japan from 1961 to 1966.

3. Mr. Reischauer's views are remarkably like those of Mr. George F. Kennan. See *The Viet-Nam Reader*, edited by Marcus G. Raskin and Bernard B. Fall (New York: Random House, 1965), pp. 15–31.
4. Robert Strausz-Hupé, "On the Southeast Asian Confrontation," *Air Force and Space Digest*, May 1968, pp. 38–41.

WHOSE SIDE IS GOD ON?

CHAPLAIN (LIEUTENANT COLONEL) EDWARD R. LAWLER

ABRAHAM LINCOLN once claimed that knowing whether God is on our side is not so important as knowing that we are on God's side. And whenever a war is at hand, Americans, at least, like to feel that it works both ways. While most do not claim to know God's position with any degree of certainty, some, more secure in their opinions, have written books to state where they would like to think God is standing during the Vietnam war.

Commander John J. O'Connor, Chaplain, U.S. Navy, in *A Chaplain Looks at Vietnam*,† does not claim to know which side God is on in Vietnam. He settles for explaining which side John O'Connor is on and why and implies that he hopes he has guessed right.

Three other writers, however, have more definite ideas. *Vietnam: Crisis of Conscience*,†† by a Protestant clergyman, Robert McAfee Brown, a Jewish rabbi, Abraham J. Heschel, and a Catholic layman, Michael Novak, describes what it is that troubles the consciences of the authors and implies that every American ought to have a crisis along with them. These three authors face the issue of Vietnam because they feel their religious convictions demand it of them. The titles of their essays, "Stumbling Into War and Stumbling Out," by Novak, "The Moral Outrage of Vietnam," by Heschel, and "An Appeal to the Churches and Synagogues," by Brown, indicate they think the churches ought to do something about a war that, in their opinion, was a mistake in the first place.

Novak reviews the events that marked the United States' gradual military involve-ment, all the while indicating it is his opinion that poor decisions were made all along the line and therefore our presence in Vietnam is illegal according to international law, irresponsible according to human law, and incorrect according to both. Novak does not openly label the United States' position in Vietnam as immoral. Perhaps he feels that only God can make that decision. As he puts it, "My aim, in short, is not to exhort or to plead, far less to condemn. My aim is to mark out the terrain clearly, and to advance step by step through it as I do so. . . . My aim, then, is not so much to persuade as to clarify."

Heschel agonizes over the horrors of all war and especially of the Vietnamese one. Not as logical as Novak in the presentation of his viewpoint, Heschel writes his appeal for immediate peace on a high-pitched emotional level from start to finish.

Brown is more definite in his statements on "the immorality of the warfare in Vietnam." After reviewing and disagreeing with the better-known reasons given by the State Department and the President for the present conduct of the war, Brown appeals to the churches of the United States. Christians and Jews alike have an obligation, he says, to call on all to repent for the sins committed in Vietnam. He confidently, if not arrogantly, claims that if church and synagogue members do not call on Americans to initiate new steps that will lead to peace, "God will judge us harshly." "But . . . if we seek to undo . . . the wrong that has been done . . . God himself will be with us."

O'Connor spends a whole chapter of his

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†John J. O'Connor, *A Chaplain Looks at Vietnam* (Cleveland: World Publishing Company, 1968, $5.95), xvi and 256 pp.

††Robert McAfee Brown, Abraham J. Heschel, Michael Novak, *Vietnam: Crisis of Conscience* (New York: Association Press, Herder and Herder, 1967, $3.50), 127 pp.

book reviewing and refuting in some detail the statements and positions of the authors of *Vietnam: Crisis of Conscience*. He sums up his opinion of the book by saying of the authors, "They bombard the emotions with half-truths, which, though multiplied by the hundreds, never become whole. They 'hit and run'—throw the most shattering statements on their pages, then rush on, without reasoned demonstration, clear evidence, scholarly support for their charges." He goes on to say, "I think it a bad book." And for anyone who holds O'Connor's opinion about Vietnam, it is a bad book.

O'Connor's opinion on Vietnam is based in great part on personal experience as a Navy chaplain with the Marines in combat areas. This experience, of course, enabled him to talk with South Vietnamese people of both high and low position. He records conversations with villagers as well as with Vietnamese government officials and journalists. The main strength of his presentation lies in the detailed treatment of the beginnings of the conflict back in the days of the Vietnamese-French war, and even before, to the early days of Ho Chi Minh as a budding Communist under his real name, Nguyen Ai Quoc. The author also discusses in some detail the Geneva Conference declaration. Another strong chapter discusses the sources of confusion about Vietnam in the minds of many citizens. O'Connor lays most but not all of the blame at the feet of the news media with an impressive list of inaccuracies and inconsistencies. One quotation from Marguerite Higgins is particularly strong in criticism of her fellow journalists' misleading influence over a State Department Voice of America broadcast.

What Chaplain O'Connor's book adds up to is an attempt to establish that the United States is on safe legal grounds in its involvement in Vietnam, for he feels that if we are on safe legal grounds, "we are probably on reasonably safe moral grounds. . . ." He states, "This approach gives us at least a reasonably concrete area of reference to examine." And so he sets about to examine what legal contracts, treaties, pacts, charters, and other international instruments he thinks give the United States reasonably safe moral grounds for being in Vietnam.

The quest for reasonably safe moral grounds is an important concept to ponder, for here we are discussing the notion of certitude. How certain can any man be in his convictions that his actions are morally right or wrong? This is the area where man seeks to be on God's side. To the man of religious faith, the most reliable criterion for arriving at certitude is the word of God. Sometimes this word is clearer than at other times. When it is clear, the religious man can proceed to do or not do with a conscience that is certain he is doing what is right and just. Most of the time, however, decisions have to be made without benefit of a clear-cut statement or criterion from God or man. So most of us proceed with the decision-making in our lives without the assurance which comes from complete, untainted certainty that what we are doing is right and just. We generally operate on what O'Connor calls "reasonably safe moral grounds."

For anyone with any amount of Aristotelian or Thomistic background, whether obtained through formal study of these philosophies or by exposure to people and cultures influenced by them, a reasonably safe moral ground is arrived at by some amount of reasoning. When we get into the area of the human conscience, we are dealing with the intellect at work making a judgment about the morality, or the rightness or wrongness, of a specific action. A conscientious objector is supposed to be someone who has made a judgment based on his reasoned examination of the morality of an act here and now. Likewise, a conscientious assentor is one who has made a judgment based on a reasoned examination of the morality of an action. The objector judges the action to be wrong; the assentor judges it to be right. But both use reason more than feelings to arrive at their decisions. An act of conscience is an act of the intelligence, an intellectual reaction—not a gut reaction.

In this day, when the so-called gut reaction is often considered as legitimate a decision-making process as an intellectual act,

it is more difficult to appeal to reason and to reasoned judgments in matters of importance. Perhaps for the psychological peace of the individual, gut reaction is the more practical method by which to arrive at decisions. But for international peace, the forces of history and the demands of political philosophies do not permit such a luxury. Judgments must be based on reasoned reaction to the facts of the world situation at the moment.

Theologians are usually men of reason rather than feelings. This has nearly always been so until the popularity of the New Morality or Situation Ethics became widespread. Classic theologians leave very little room for the influence of feelings on the decision-making procedures of a man. They have always been more interested in telling it the way it ought to be rather than the way it is. The advocates of New Morality and Situation Ethics leave plenty of room for individual feelings when deciding on the rightness or wrongness of an action.

O'Connor has settled for the more classic approach to deciding the morality of the Vietnam situation. As he points out, "We are *not* asking whether we like or dislike, want or don't want to be engaged in the conflict." While he is familiar with the classic conditions for a just war given by theologians over many centuries, he does not review them one by one and apply them to the Vietnam war. Such an exercise, in view of the complexities of modern international relations and the massive destructive power of nuclear weapons, usually leads to diverse opinions and conflicting decisions that settle little or nothing. A review of the old but still modern conditions for a just war, introduced into Christian thinking by Augustine in the fifth century and refined by theologians since, will show what difficulty there is in applying them to a specific war in modern times. One theologian states these conditions thus:

> That war may be just the following conditions must be fulfilled: It must be declared by the State itself; it must be necessary in the last resort after diplomacy has failed; there must be a grave and just reason for it; the method of it must be just, and in accordance with

international law; an upright purpose must be intended; it may not be protracted after due satisfaction has been given or offered; the conditions of peace must be just, and may not be crushing, unless such severity is necessary for present self-defence.[1]

Some theologians explain that the concept of a just method of waging war, and not protracting it after due satisfaction has been given, includes (1) the use of only that amount of force needed to defeat the enemy rather than enough to completely annihilate him, (2) weighing the overall cost of the war against what is to be gained. "Is it worth a fight?" is one of the most important of all questions that a nation's leaders must ask before entering a war.

Neither O'Connor nor the authors of *Vietnam: Crisis of Conscience* have taken on the task of trying to apply all these classic conditions to the Vietnam war. This reviewer knows of no theologian, philosopher, church leader, or author who has. Theologians and other scholars, Christian, Jewish, and some without religious affiliation, have studied and arrived at different conclusions about the morality of nuclear war in general. Roland H. Bainton, John Ford, S.J., and Bertrand Russell are among them. In *Christian Attitudes Toward War and Peace: A Historical Survey and Critical Re-evaluation,*[2] Roland Bainton presents in some detail the variations in ethical opinions about war from antiquity to the present. James O'Gara in *The Church and War*[3] has summarized the thinking of Christian thinkers on the subject of war and peace over the course of Christian history. But none of these men care to tackle the problem of labeling the Vietnam war one way or the other: just or unjust.

Nor have the leading church bodies actually released any official statements that give evidence of a point-by-point application of the classic conditions for a just war to the Vietnam conflict. In January 1966 the Synagogue Council of America issued a statement which said in part:

> Our religious conscience compels us to exert every influence so that the action in Viet Nam

can be moved from the battlefield to the negotiating table.

*   *   *   *

We do not lay claim to moral certitude and refrain from moral dogmatism in this complex and agonizing situation. Within the range of religious commitment and concern, differences as to specific policies can and do exist. We recognize that those who see the need for checking Communist subversion by military means are no less dedicated to the cause of a just world peace than those who believe the United States must cease hostilities in Viet Nam.

The General Assembly of the National Council of Churches said in a 1966 statement on Vietnam:

To keep the Vietnam war under constant moral scrutiny, widespread study, discussion and action are required. Much of this can and should be done together with each religious community adhering to its own convictions. Thus, may we join in our plea for peace, and express our common will for peace.

The American Catholic Bishops in a joint statement in 1966 wrote:

Americans can have confidence in the sincerity of their leaders as long as they work for a just peace in Vietnam. Their efforts to find a solution to the present impasse are well known. . . . While we do not claim to be able to resolve these issues authoritatively, in the light of the facts as they are known to us, it is reasonable to argue that our presence in Vietnam is justified.

These statements by the leading church bodies in the United States indicate that the churches do not claim to have complete moral certitude nor do they feel able to speak with authority on whether the Vietnam war is a just one in the sense of the classic conditions. What the church leaders are saying in effect is that the United States' presence in Vietnam is on "reasonably safe moral grounds."

When distinguished religious leaders, who are looked upon by many American citizens as reliable guides in matters of morality, state honestly that "we do not lay claim to moral certitude . . . in this complex and agonizing situation" and "we do not claim to be able to resolve these issues authoritatively," it is easy to understand why the average morally mature citizen hesitates to condemn the Vietnam war as immoral. In the case of Vietnam, complete moral certitude is difficult to come by. The question is, "What's an average citizen to do?"

John O'Connor has tried to answer this question by carefully outlining the legal foundations on which the United States has built its case for being in Vietnam and waging the present conflict against the North Vietnamese and the Viet Cong. While the classic conditions for a just war may be too complex and even too antiquated to apply to modern warfare, the legal agreements between nations are more recent and less difficult to understand. O'Connor's point is this: if these legal agreements, based on the Geneva Accords of 1954 and 1962 as well as on the actions of three presidents and the Congress of the United States, are valid, then we are on safe legal grounds; and if we are on safe legal grounds, "we are probably on reasonably safe moral grounds."

Of course, whether we are on safe legal grounds depends on the integrity of Presidents Eisenhower, Kennedy, and Johnson and their Administrations. If they have been dishonest in entering into legal agreements among nations, establishing the treaties and pacts which have committed the United States to the defense of South Vietnam, we are not on safe legal grounds and probably not on reasonably safe moral grounds. In the face of the violent and impassioned disagreement with the Administration, so often expressed with blatant viciousness and vulgarity, which frequently questions the moral and intellectual integrity of President Johnson, Chaplain O'Connor lets his anger show when he asks, "By what right do we assume or attribute either malice or stupidity on the part of the President of the United States, simply because we may disagree with his policy decisions?"

At the time of World War II, religious leaders of the major faith groups in the United States, while not declaring the war just according to the classic conditions for a just war,

did assure their flocks that an American citizen would be justified in participating in the defense of his country. The religious leaders then and now have acted to help their people form their consciences on reasonably safe moral grounds. In an era of nuclear weapons, complex international relations, highly populated centers, and other complications unforeseen by the philosophers, theologians, and religious leaders who formulated the classic conditions for a just war, modern man must seek additional foundations for his moral decisions because the classic conditions continually become more difficult to apply. If the citizen cannot look with confidence for guidance to those men and women whom he has freely elected to office, where else can he look? The average citizen, and indeed the above-average citizen, unless he is privy to the government's inner circles of decision-making and thus able to use firsthand information, must be able to trust the political leaders and their decisions.

To add further to the average citizen's bewilderment about the morality of Vietnam, the subject has been discussed by men and women of renown both in and out of government. Distinguished scholars, politicians, scientists, both retired and active-duty military leaders, clergymen, former and present cabinet members, presidents, and vice presidents have all written and spoken their highly varied opinions concerning Vietnam. It is interesting that O'Connor and the authors of what he calls "a bad book," *Vietnam: Crisis of Conscience*, list at least eight of the same books and articles in their respective bibliographies. This alone indicates that intelligent people arrive at opposite conclusions after reading the same materials about Vietnam. The difficulties encountered in arriving at a moral conviction on the rightness or wrongness of the United States' position in Vietnam have thus been compounded for the citizen of average intelligence and sincerity.[4]

Chaplain O'Connor has painstakingly reviewed many of these conflicting opinions and carefully outlined the historical and legal grounds for the United States' presence in Vietnam with the hope that:

> Perhaps something of what I say will make enough sense to demonstrate that there *is* reason in what our country is doing, not madness; that there is much more honesty than there is duplicity, much more clarity than ambiguity, much more justice and sincere concern about the peoples of Vietnam and all of Asia and all the world than self-aggrandizement, or arrogance of power, much more humaneness than inhumanity, much—very much—more anguished determination to achieve a just, enduring peace than to protract war.

A Chaplain Looks at Vietnam comes very close to achieving the author's ambitious aims as stated in the above words from his Introduction. While the book will never convince those who emotionally disagree with the United States' presence in Vietnam, it will enable the thoughtful citizen to consider carefully the government's position and to ponder seriously where his own conscience stands. The average citizen can say of himself, as the religious leaders of the country have said of themselves, that he does "not lay claim to moral certitude" about Vietnam. But he can say with them that he has "confidence in the sincerity of his leaders." Having said this, the average citizen will still not know for certain on which side God is in this conflict. But he will know for certain that serious efforts are being made to be on God's side. And that, after all, is the meaning of being on reasonably safe moral grounds.

Maxwell Air Force Base, Alabama

Notes

1. Henry Davis, S.J., *Moral and Pastoral Theology*, Vol. II (London: Sheed and Ward, 1945), pp. 148–49.
2. Roland Bainton, *Christian Attitudes Toward War and Peace: A Historical Survey and Critical Re-evaluation* (New York: Abingdon Press, 1960).
3. James O'Gara, *The Church and War* (Washington, D.C.: The National Council of Catholic Men, 1967).
4. The World Council of Churches Assembly at Uppsala, Sweden, and the pastoral letter of the American Catholic bishops in 1968 recognized the sincerity of those conscientious objectors whose objection is only to a specified war rather than to all wars.

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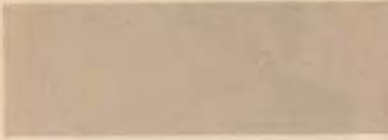
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AWARD

The Air University Review Awards Committee has selected "Our Gains from Success in Vietnam" by Brigadier General Henry C. Huglin, USAF (Retired), as the outstanding article in the January-February 1969 issue of the *Review*.

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