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the cover

In his discussion of military professionalism, Lieutenant General Ira C. Eaker, USAF (Retired), treats the subject from historic, present, and future perspectives. He looks back to the landmark Battle of Hastings (1066)—suggested here by William the Conqueror's exhorting his troops, as adapted from the Bayeux Tapestry; to the twentieth-century professionals he has known and admired—notably the great World War II aviator General Carl "Tooney" Spaatz; and on into the future with prognostications on military professionalism.



THE MILITARY PROFESSIONAL

LIEUTENANT GENERAL IRA C. EAKER, USAF (RET)

IT WOULD BE difficult to find a more appropriate introduction to the topic of military professionalism than an account of one who epitomized that quality to the very highest degree: General Carl "Tooey" Spaatz, the first Chief of Staff of the United States Air Force. He was one of several aviation greats who have recently joined the ranks of

The innumerable caravan which moves
To that mysterious realm

So we who aspire to military professionalism will do well to keep green in our memory his life and work.

General Spaatz was a pioneer aviator. He learned to fly in 1915 and was a combat pilot and flying field commander in France during World War I. Between



the wars, he was an ardent follower of General Billy Mitchell, an enthusiastic and effective advocate of air power and of a separate and independent Air Force, co-equal with the Army and Navy.

In World War II, General Spaatz commanded all Strategic U.S. Air Forces in Europe and was General Eisenhower's principal aviation adviser, having no equal in the Supreme Allied Commander's high regard and affection. General Eisenhower frequently referred to Spaatz as the greatest air commander, air tactician, and air strategist of World War II. He was the only airman and the only general officer present at the surrender ceremonies of both Germany and Japan.

After the war, it was his influence, more than that of any other man, which resulted in the Act of September 1947 creating the Air Force as we know it today. Thus, it was inevitable and entirely fitting that he became the first Chief of the new coequal, independent Air Force.

After retirement he continued to render valuable service whenever his experience and wisdom were called upon by the Secretary of Defense or Commander in Chief. He was Chairman of the Board that picked the site for the U.S. Air Force Academy, recommended its organization, its curriculum, and the implementing legislation. He also served three Presidents on the American Battle Monuments Commission.

Spaatz was one general who never made a major mistake. This statement has broad factual basis, as a matter of record as well as from my fifty-seven years of close association with him since November 1917. I commend to you and to all students of air power, historians, and future air leaders the study of his writings, teachings, and methods on the tactics, strategy, and organization of military air power.

THAT profession which General Spaatz served so magnificently exists as a vital element to promote the welfare and security of our country. Let us consider some of the characteristics of the military profession. What sets it apart? What makes it distinctive? What are its advantages and disadvantages? How does it compare with other professions like law, medicine, teaching, or journalism? I mention these because in my college days I was torn between journalism and the law while my father hoped I would be a doctor. But World War I intruded and interrupted career plans for me, as successive wars have done for the personal plans of so many of my fellow Americans in the last half century. So military service became my career, and it is from that perspective that I evaluate the military profession then, now, and for the future.

In 1917, when I enlisted (along with a million others) because President Wilson had asked Congress to declare war on Germany, the military profession was not well known to our people generally. I had never seen a regular Army officer or soldier. The National Guardsman was the only one I had ever seen in military uniform. It was a new and strange world I was ushered into when I reported to the first officers training camp in May 1917. There I saw my first general officer, Brigadier General Robert Lee Bullard. He rode a horse; we marched in summer heat, on dusty Arkansas roads, carrying a rifle and a 65-pound pack. I there and then formed a definite conclusion that a general's job was good work if you could get it, a view that has not altered, although it has been shaken at times, during the intervening years.

When I reported to my first regiment, the 64th Infantry at Fort Bliss, Texas, as a second lieutenant, I found that private soldiers were paid \$21 per month, and

the government allowed 19¢ per day to feed each of them.

Chance gave me an opportunity to transfer to aviation and learn to fly. I got command of my first squadron in September 1918 at 22 years of age—200 men entrusted to my care and leadership and who looked to me for guidance, welfare, and protection. A responsibility? Yes, an awesome one, requiring 16 hours a day with after-duty hours for worrying. An opportunity? Yes, I so considered it and, in retrospect, still do. Especially when I was authorized, a year later, to recruit a squadron and take it to the Philippines.

That postwar Air Service was a very small organization, 18,000 men, 1800 officers. The first budget I helped defend, in 1926 (I was then on the Air Staff in Washington), was for \$26 million, total. That sum would not buy one B-1 bomber today. That Army Air Service had 24 identifiable officer career skills; today's Air Force has over 300 career officer specialties.

One of the earliest decisions a young officer has to make, and also one of the most fateful, is which of those career specialties he shall pursue. They fall generally into two major classifications: command and staff. The command opportunities are considerably fewer in number, and the number diminishes rapidly with the passing years. There is, for example, at any one time, but one Chairman of the Joint Chiefs of Staff and one service chief.

The rewards are greater, by normal standards, in command careers, but they are by no means inconsequential in staff careers. Staff officers frequently have larger influence on great events than commanders. General George Marshall, Chief of Staff of the Army, exercised more influence on national and international councils and events than Generals MacArthur or Eisenhower, the Supreme

Commanders in the field.

The first thing an officer must determine, in career selection, is personal satisfactions and ambitions. It will help greatly in this exercise if he has the capacity to recognize and evaluate accurately his ability, his relative standing in his peer group. Is he average, above average, or outstanding, with reference to the professional group in which he proposes to compete?

If you will permit another personal reference, I almost decided against a post-World War I military career because I judged that West Point graduates had an educational advantage which I probably would not be able to overcome. That is why, after deciding to compete, I took every educational opportunity presented, including night school at the University of the Philippines and George Washington University and full-time courses at the Law School of Columbia University and at the University of Southern California, where I completed a degree in journalism.

I very early decided that my career specialties would be flying and command. Diligent pursuit of the former brought the opportunity to engage in some especially interesting enterprises, like the *Question Mark*, a world's flight endurance record, and the Pan American Goodwill Flight, among others.

My pursuit of command opportunities won me command of squadrons for eight years, of groups two years, and air forces five years.

Despite my earnest and ardent effort to qualify for and obtain command roles, my thirty years of active duty were divided equally between command and staff assignments. In retrospect, I can now say that both contained career satisfactions, but the command side offered greater opportunity to influence major events. It also entailed more hazard and heartburn.

The successful staff officer probably

works harder. It takes more effort to influence the decisions of military superiors than to make the decisions yourself, but the dangers inherent in decision-making are infinitely greater. The commander at any level has good people to help him, but he alone must bear the burdens and consequences of decision-making. As President Truman well said, "The buck stops here."

THE military profession offers some very definite career advantages and opportunities, and it suffers some handicaps, uncertainties, and disappointments. My assessment of the advantages and opportunities, from 57 years of pursuing and observing them, includes the following:

a. The privilege of living among and working with men and women of the military profession. No other group of that size possesses so high a level of honesty, morality, and integrity.

I noted recently that there is now popular recognition of that fact. The Institute of Social Research of the University of Michigan recently published the results of a survey showing that the public rates the military highest among major institutions, according to how good a job that institution is doing for the country.

In the same survey, Americans were asked about "the people who are presently running" some of these institutions. They were asked to tell "to what extent you think these people are honest and moral." In this item the military ranked very near the top, ahead of all other federal groups except the Supreme Court; ahead, for example, of Congress, the news media, and all other federal government officials.

There has been a lot of left wing, liberal shooting lately at the code of honor at the service academies—West Point, Annapolis,

and Colorado Springs—alleging that the oath "We will not lie, cheat or steal, nor tolerate among us those who do" is now outmoded, old-fashioned, and no longer needed or valid. Well, the tragedy of Watergate would never have happened had its actors and agents abided by that code.

b. The opportunity to serve with people of loyalty, dedication, and patriotism. In World War II, I had the privilege of commanding and serving with more than a quarter of a million such men and women, more than 20,000 of whom lost their lives while engaged in demonstrating those qualities.

c. The opportunity for personal education, learning technical, economic, organization, and management skills. I know of no other organization where there is an equal opportunity for these advantages today.

The Air Force, for example, has more than 1000 Ph.D.'s in its officer corps and several doctorates in its enlisted ranks. Nearly all officers have a college education, while more than 20,000 have master's degrees. Ninety-eight percent of those enlisting today are high school graduates, and the principal inducement for enlisting is to acquire further education or to learn technical skills. The Air Force is the largest and most successful trade school in the world.

People in the civilian community, some 10 million of them, learned, while temporarily in the armed services during the Second World War, a respect and admiration for military organization and method. That accounts, at least in part, for the large numbers of military men who upon retirement are sought by civilian industries.

d. The military community is a good environment in which to live and rear families. Less crime, fewer economic ine-

qualities, and a better environment are to be found there; better sanitation, better standards of health, more regard for the rights of others. Very few civilian communities can equal the economic and social status of all military posts, camps, and stations.

e. Military service offers rare opportunities for travel, for meeting the peoples of other countries, and for the stimulating experience of living and working with foreign Allied leaders and people. How else, for example, would I have had the opportunity to meet with the political and military leaders of all the Allied nations?

The career disadvantages for the military profession include:

a. Economic ones. Salaries are on the whole considerably lower than those in civilian life. Anyone who puts a premium on money or material things will do well to pass up the military career. There are no service millionaires.

b. A military career does not offer some of the personal ego satisfactions associated with political life or the arts. Normally, few military men can hope to exercise community, state, and national leadership like a politician or a journalist.

c. The military life is more nomadic, subject to more frequent changes of station or residence, than most civilian professions. Some term it a rootless society, a gypsy life. I notice, however, that the children of military families seem to compete well in school and seem generally well above average in appearance, habits, education, and industry.

d. The military life is more demanding on the individual than most civilian professions. No other profession possesses the personal hazard associated with the normal requirements of the military. For example, some West Point classes have been practically decimated by our periodic wars, like Korea and Vietnam.

The military may require more personal sacrifice, longer periods of family separation, and greater hardships than the civil-life professions. On the other hand, these are among the challenges of the military profession. What civilian will ever have the satisfaction of shooting down a MIG, evading a SAM, or destroying an enemy weapons factory?

Our profession has always been in the forefront of adventure. Lewis and Clark were a lieutenant and a captain; and ten of the first twelve men to leave footprints on the moon were military professionals.

SINCE a critical factor for the military professional is leadership, I should like to discuss this subject briefly.

The subject of leadership has long been one of my prime interests. Upon returning from my first Sunday school class, at five years of age, I am told, I asked my father whether I would have a chance, if I worked hard and lived right, to be, some day, one of the Twelve Apostles. He thought not. Subsequent events have amply verified his judgment.

I have two favorite quotations concerning leadership. The first is from an ancient fable: "A flock of sheep led by a lion will always prevail over a pride of lions led by a sheep."

The second came from the writings of Field Marshal Archibald Percival Wavell, who said, "The more mechanical become the weapons with which we fight, the less mechanical must be the spirit which controls them."

I suppose if you asked any ten people to name the requisites of a leader, all would have courage as number one on their lists. I would agree, but perhaps for a different reason.

It is true that in earlier times physical courage was the first requirement of the

leader. In the days of knighthood this was so. At the Battle of Hastings, King Harold was at the head of his troops as he was supposed to be. In the Napoleonic wars the Emperor's marshals often turned the tide of battle by leading the charge. With the changing times the need for the courage to get shot at, to take the personal risks in the front ranks on the battlefield, passed to commanders of lower echelons. By the time of the First World War, even division commanders were seldom seen in combat; army and supreme commanders never. Some decry this trend. The British General J. F. C. Fuller wrote a book, about 1935, the main theme of which was a warning that Britain would not prevail in future wars unless her admirals stood on the quarterdeck like Nelson with the flagship the first battlewagon in the line, nor until her soldiers were led by a man out front as Roberts and Kitchener were wont to do.

In my book courage is still the first requisite of the leader, but there are new requirements for displaying it. The brand of courage that top leaders were required to exercise in World War II was the courage of decision-making. In actuality, there are not many candidates for top leadership, and one reason is that most men hate to make fateful decisions. When the military commander has to make a decision which will mean success or defeat, which will cost human lives, most men shirk the task. The great majority are happier to follow. I am convinced that Eisenhower would have much preferred being shot at while leading an airborne division into combat than having to make many of the decisions of the Supreme Commander in World War II.

My candidate for the most courageous leader of all time will be the man who decides when to push the button to launch the defense against the nuclear

attack of the future. He may be deep under a mountainside, as far removed from the scene of combat as one can be. If he decides and acts in time, we shall survive. If he lacks the courage and decisiveness to move in time, we are lost. He may have less than one minute in which to make that decision.

Back in the eighteenth century, Marshal Saxe said, "Though the first quality a general should possess is courage, without which all others are of little value, the second is brains, and the third is good health."

So, let us have a look at brains or intelligence with relation to leadership. My historical and biographical studies of the great leaders of the past, and my observation of the leaders I have known, do not indicate that a high IQ is the certain hallmark of the leader. I do believe that all leaders are above the average of the groups they lead and all are brilliant in some areas. Yet in other ways some have been quite stupid. At least one leader who achieved phenomenal success for a time was quite mad. His name, of course, was Adolf Hitler.

Since I find so few leaders who were Ph.D.'s, perhaps that is why I have been concerned of late at the current trend to turn over to scientists the selection of our weapons, and indeed the delineation of our tactics and strategy. As I see it, if you want to go to the moon, call on the Ph.D.'s; if, on the other hand, you want to keep peace on earth, follow men better versed in the social sciences—those who know how to influence and control the emotions and the minds of men.

A leader who can, early in his career, establish a reputation as being endowed with good luck is fortunate indeed. Everyone wants to play on a winning team. Napoleon's first question about a prospective new general was, "Is he lucky?"

The best definition of luck that I have seen is: "An individual is lucky when a thoroughly prepared man meets, recognizes and seizes an excellent opportunity."

I read an acknowledged authority one day who said that all great leaders of the past had one thing in common, great physical stamina, and all great leaders of the future must be sound of wind and limb—a strong plea for physical fitness. By a strange coincidence, the same day I read a little passage I think is worth passing on: "Down the streets of Portsmouth, more than a hundred years ago, walked a sailor with one arm, one eye, a persistent state of nerves, and unable to tread a ship's deck without being seasick. Indeed he would probably have been in a home for incurables, were not his name Admiral Lord Nelson. The man's spirit drove the flesh." The point is: when weighing the characteristics of a leader, remember that a stout spirit can drive a weak body a long way.

There is another facet of leadership which interests me. There are no reluctant leaders. A real leader must really want the job. George Washington is sometimes cited as an example to the contrary. I do not agree. Washington went to every fire that started in the Colonies from his early manhood. Nobody could have even an Indian war without George Washington. Not only was he the best-trained and most-experienced military leader of his time but everybody knew it.

Churchill had been at pains to acquaint the British people with his qualities and his availability from the time of the Boer War. They did not have to look for him in England's darkest hour. He was there, ready and willing.

If one finds need for a leader and has to coax or urge his selection to take the job, the best advice is to pass him over; he is not the right man.

It is strange that anyone should strive to be recognized as a leader, as the rewards have been slim indeed. Churchill was repaid for saving Britain by being defeated at the next election. Napoleon died in exile. Lincoln was shot. Robert E. Lee came away from Appomattox and four years of crucial leadership with nothing but his horse and his sword.

All successful leaders seem to have been articulate. They had a faculty for inspiring their followers with the spoken word. They could and did say the right thing at the right time. A leader need not be an orator of the powers of a Mark Antony, Bryan, or Churchill. MacAuliffe was articulate at Bastogne with one word: "Nuts." Patton was often very articulate with two words: "Follow me."

The only quotation I have ever heard from Pershing was reported by an American correspondent present at the tomb of Lafayette on June 14, 1917, Pershing's second day in Paris. He made a great speech that said it all: "Lafayette, we are here." There are many other fine examples: Lawrence's "Don't give up the ship." Dewey's "You may fire when ready, Gridley." Lincoln's effort at Gettysburg will always be a classic.

One of my favorite quotations, in this vein, comes from a message General Foch sent to General Joffre during the second battle of the Marne: "My center is giving way, my right is pushed back, situation excellent, I am attacking."

All great leaders have had the wit, the timing, and the courage to influence their followers to action at the critical time by a few well-chosen words, or by example, or both.

The day may not be far away when we shall urgently need the greatest leader we have ever had. It is my hope that he will have the stature for the occasion. May he be well trained for his task. I pray that he

have the audacity to assume the task and the courage to make the fateful decision in time to save us. May we have the good luck to find him and the good sense to follow him.

AND NOW, some observations and predictions about the military profession and professionals and perhaps a little advice—making like a patriarch! Is it not written that “your old men shall dream dreams, your young men shall see visions”?

Much of the appeal in our profession stems from its history and tradition. But not all tradition is necessarily good. I remember that Churchill once made a proposal to a stuffy old admiral who said, “Oh, Mr. Prime Minister, we couldn’t do that. It’s against Naval tradition.” Whereupon Churchill responded with sarcastic scorn, “Ah yes, naval tradition: rum, sodomy and the lash.”

Examine continually all traditions, customs, and procedures of the past, to see if they meet today’s needs and conditions. Hold on stubbornly to the good but eliminate promptly those not pertinent to these times and requirements.

One of the historic traditions now giving ground slowly—too slowly, I believe—is that the military profession is exclusively for men. Recently, for example, several generals and admirals testified before a Congressional committee against admitting females to the service academies. They said all of their graduates must be trained for combat, and all must agree that women should never participate in combat.

This was said either tongue in cheek or it was a flagrant miscalculation. Each of these military seniors knew that they were sending some of their graduates immediately to pursue advanced studies in universities in law, medicine, engineering,

and economics—nothing to do with combat. They were wisely training them for administration, management, weapons selection, and other noncombat specialties.

The records show that fewer than 2 percent of all military academy graduates ever participate in combat, despite the fact that we have had four wars in this century.

Women should and will be admitted to the armed services academies. Since we have women officers, they must be given equal opportunities for qualification as the men with whom they will have to compete. Of course, they should not be admitted in trifling numbers—1, 2, 3, or a dozen or a score. Instead a bill should be enacted providing for an orderly process. It should stipulate that 200 women be admitted to each academy in 1976 enough for a squadron or company. Thereafter the number admitted should be the proportion that female officers represent in the service.

It will be a better military service with more women, for the simple reason that women are better people, as every man knows, remembering his mother and giving his wife her due.

Another tradition that was recently broken was Selective Service, or the draft, as the method for raising military manpower. Conscription never made any sense. I am surprised that it lasted so long, but at last technology—combined with the tragedy of employing it in the Vietnam war—and President Nixon killed it.

It never would have been necessary if military men had been paid salaries commensurate with those for jobs in civil life requiring the same education and skill. Now this is being corrected, and the all-volunteer force, in the first year of trial, has proven an unqualified success.

An unwilling, juvenile work force would have been inadequate for any organization

or business. To trust the most important enterprise we have, our nation's security, to such a force was a dangerous, grave error, now fortunately corrected prior to national disaster.

There is another characteristic which has crept into our military system in the last twenty years and which comprises a present hazard, both to our profession and the security of our country. So-called intellectuals and "think tanks," people totally without military experience and qualification, have too often been allowed to select our weapons and dictate strategy and even tactics employed on the battlefield. That fatal practice grew up under McNamara and his Whiz Kids and still persists.

The military profession must insist, by every legitimate means, that weapons and tactics be under its cognizance and that it be heard by the decision-makers on strategy on the national level.

This is not a challenge to civilian control of the military. On the contrary, the military profession, to its everlasting credit, has been the strongest supporter and defender of civilian control, which is

fundamental to our system of government.

FINALLY, military people are our greatest strategic resource. One thing we have learned from four wars in my lifetime is that we produce better military manpower than any other nation in the world. It is better educated and better qualified to operate effectively the highly technical weapons of today and in the future. It possesses greater dedication to the preservation of freedom than any other people, as attested most recently by 50,000 who gave their lives in Vietnam.

Our future military leaders must never forget that; they must see also that all others remember it. They must cherish and nourish our *people* resource as the greatest factor in our future security.

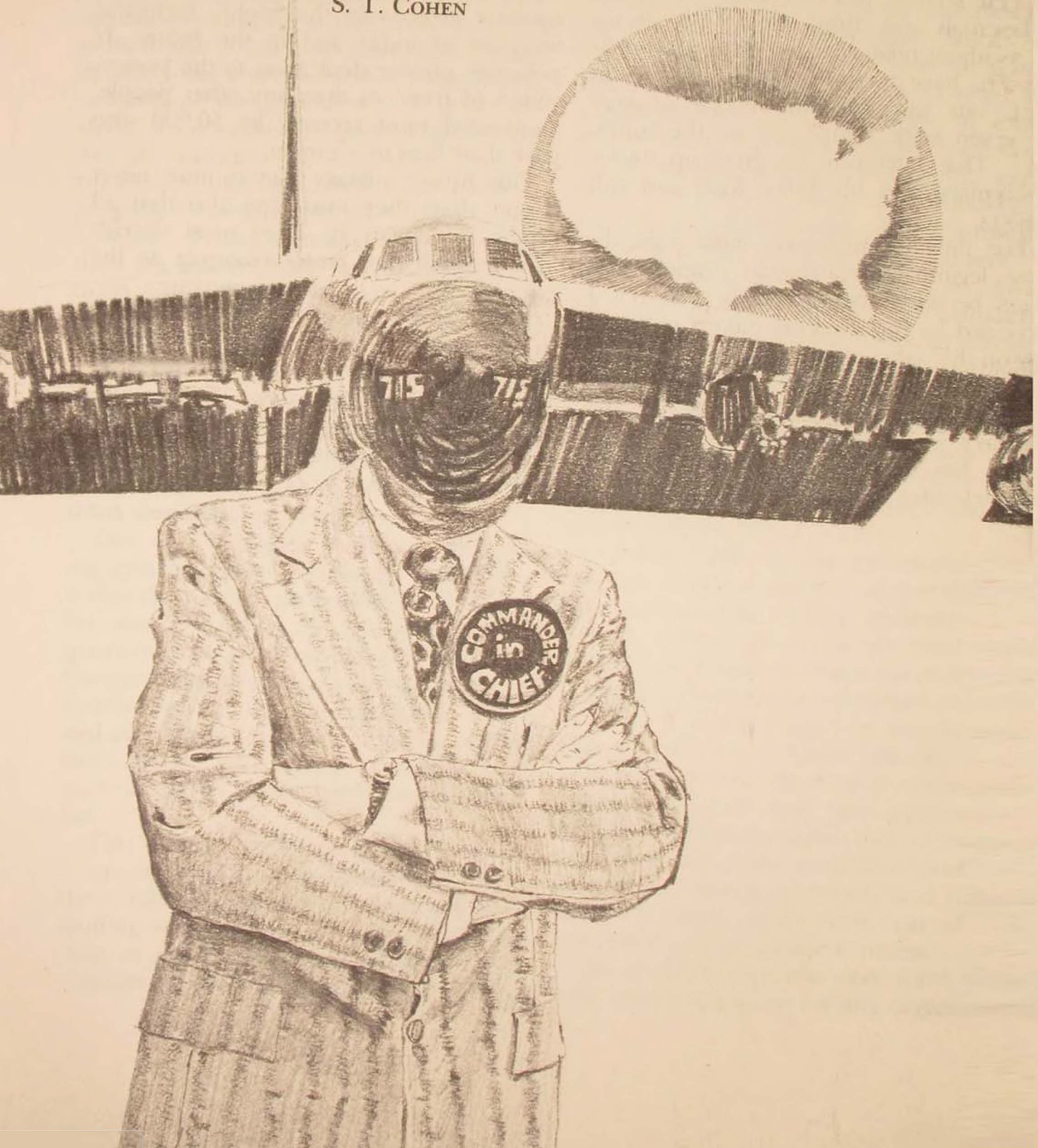
My modest hope is that by speaking up in the pages of the *Air University Review* I do more than pursue my avocation of watching the future careers of those who continue to practice my favorite profession, which is responsible, more than any other, for the security of our country.

Washington, D.C.

U.S. STRATEGIC NUCLEAR WEAPON POLICY

Do We Have One? Should There Be One?

S. T. COHEN



IN his first Foreign Policy Report to the Congress (February 1970), President Nixon spelled out a distinct dissatisfaction with the strategic policy he had inherited from the previous Administration. He, therefore, mounted an effort to develop a new set of policy criteria that would more realistically reflect, as he described it, the "inescapable reality" of the Soviet strategic buildup plus the emerging Chinese capabilities.

In expressing his unhappiness with the former policy and obviously searching for a new one, Mr. Nixon asked two questions: (1) Should a President, in the event of nuclear attack, be left with a single option of ordering the mass destruction of enemy civilians, in the face of the uncertainty that it would be followed by the mass slaughter of Americans? (2) Should the concept of assured destruction be narrowly defined, and should it be the only measure of our ability to deter the variety of threats we may face?

Four years after these questions were asked, it was divulged, early in 1974, that the United States was revising its targeting doctrine to include selective, relatively small-scale strategic options that would allow a variety of attacks against Soviet military installations and other important assets not collocated with urban populations. Toward implementing this new doctrine, the Defense Department announced its plans to research further on improved delivery accuracy and warhead yield-to-weight ratios.

Predictably, this revelation set off a debate on the efficacy and desirability of the new doctrine, resurfacing the basic issues and concerns regarding U.S. strategic nuclear policy. Certain elements in the Congress voiced apprehension over its implications. At the same time, though, there was no public indication as to how President Nixon viewed these expanded options; and, at this juncture, President Ford has not revealed his views on the subject. The chief spokesman for the proposed new doctrine, which holds a strong emphasis on counterforce operations, thus far has been the Secretary of Defense; and it is interesting to note that, a decade ago, when the U.S. briefly moved toward a strategic counterforce doctrine, it was Secretary McNamara who publicly carried the ball while President Kennedy remained quite silent on the sidelines.

In arguing the merits and demerits of the new doctrine, one is forced to come to grips with a very basic question: What is U.S. strategic nuclear policy? While the question seems more than worthy, its answer, in any coherent and succinct form, does not seem to be forthcoming.

At first consideration, a well-defined strategic policy would seem to be an essential underpinning of U.S. national security. Yet it should be noted that when U.S. Presidents have attempted such definition and endeavored to implement the policy, considerable perturbations have resulted on the national scene, and the

record of successful implementation has been spotty at best.

Considering this history, one can fairly ask whether the U.S. should seek a clearly defined strategic nuclear policy. In fact, one might go one step further and ask, iconoclastically: Should there be one?

Who Determines U.S. Strategic Nuclear Policy?

It is noteworthy that some five years ago President Nixon, in questioning what U.S. strategic policy ought to be, highly personalized his office with respect to the execution of strategic options:

Should a President, in the event of nuclear attack, be left with a single option . . . ?

"A President," being the Commander in Chief, would, it seems, logically be the one to exercise strategic nuclear options, and therefore this personalized phrasing would appear to be thoroughly proper. But, heretical as this may sound, is it?

Despite national and Congressional reservations expressed over Presidential direction of the Vietnam war, it still was generally conceded that U.S. policy for prosecuting this war properly belonged to the President. As in previous conventional wars, this responsibility and purview were never seriously challenged. However, notwithstanding the crucial nature of certain of these wars—particularly World War II—the American psyche, conditioned by experience with nonnuclear conflict, held the expectation that such wars could be fought with both meaning and an ability to effect a satisfactory outcome.

At the basis of this national attitude was a belief that, whereas the nation's *political* survival may have been at stake (directly or indirectly, as a consequence of events

that might follow an unsatisfactory military outcome), there was no paramour concern that its *biological* survival was seriously threatened. There were ingrained feelings on how destructive conventional munitions could be, and the upper limit was not held to menace survival.

On the other hand, if there has not been an overt challenge to the President's control over our strategic nuclear arsenal in recent years there also has not been a national acceptance of a President's right to use these weapons as he might see fit to use them. For at least the last ten years the U.S. horror-image of strategic nuclear warfare has been of a nature that essentially rejects such conflict as not being rational or even possible, at any level. This image has not been contradicted by any Administration and in fact has generally been supported by a series of apocalyptic statements on the inconceivability of thermonuclear war.

We should recall that when major national debates have taken place over various aspects of strategic warfare (the civil defense issues of the early 1960s and the antiballistic missile [ABM] debate during 1969–70), these debates were cast mainly in a mold that equated nuclear war with national extinction.

In rejecting President Kennedy's proposed civil defense program, the nation was rejecting the presumed, highly intellectualized logic that differences in levels of catastrophe represented meaningful differences in outcome. And, by so doing, the nation was refusing to cooperate in Presidential attempts to establish a "rational" strategic policy which, by admitting to the possibility of nuclear war, sought to establish a U.S. posture that would produce favorable war outcomes.

Similarly, during the ABM debate, the area (population) defense component of

the Administration's Safeguard proposal fared poorly with the public, and this part of the program was effectively removed by Congressional action before it was formally ruled out by SALT I. The failure to achieve the sought-after implementation constituted, in effect, a failure to understand the nation's attitude toward strategic war and what latitude it was willing to give a President in his personal efforts to formulate and implement strategic nuclear weapon policy.

In essence, these national constraints have been rebuffs to Administration efforts to set forth, for public acceptance, preferred versions of strategic policies. These efforts, which admitted to the possibility of strategic war and even went so far as to publicly rationalize proposed policies in considerable quantitative detail dealing with specific thermonuclear exchanges, were aimed at enlisting public support by anticipating a national rationality comparable to that established at the Presidential level. Therefore, those rebuffs have, in effect, shown that the public (including the great bulk of its most erudite and intellectual citizenry), when forced to "think about the unthinkable," is not really capable of "rational" thought as practiced in Washington.

In the real world, the question whether Presidential advisers on nuclear policy or the public hold the more rational views on nuclear warfare, with its enormous imponderables, is not a resolvable issue. However, in the real world of how the U.S. deals with nuclear policy, whenever this subject becomes a matter of national debate, when Presidential decisions have surfaced and public support has been solicited, rational approaches developed by the executive branch may enlist little public understanding or support. So perhaps the most salient point to be made on strategic nuclear policy is that its imple-

mentation should be attempted not on a "rational" basis, within a theoretically or academically desirable analytical framework of nuclear exchanges and outcomes, but rather on the basis of a war that cannot happen because one cannot contrive and analyze a set of circumstances that permits this possibility.

In other words, if we are to move forward in strategic weaponry, we might do best by emphasizing weapon systems which *cannot* be incorporated into the calculus of strategic exchanges and outcomes and, thus, can stir up public concern that they have rational, and therefore possible, use—for the overwhelming public attitude is that there is no such thing as rational or possible use for these weapons. Or, in the context of former Defense Secretary Melvin Laird's position of realistic deterrence, we should understand that realism, when dealing with such weaponry, is best defined against a political, rather than analytical, backdrop.

Returning to President Nixon's question, this query deserves a question in response: *Who* is "a President"?

First of all, as to *who* is "a President," even a given President does not necessarily remain a given President and, in the course of his office, can change considerably in his views and objectives in accordance with changes in the world around him. Thus, with respect to strategic policy and requirements, it is entirely possible that a President may later regard as an albatross around his neck a nuclear policy which originally seemed to be highly desirable, and his attitude toward the matter may change appreciably.

Second, "a President" hardly is any more an invariant on national security matters than he is on domestic issues, and a new President may bring in very much different beliefs on security policy than his predecessor held. This was certainly the

case when President Kennedy came into office with his Administration's flexible response doctrine, which placed the utility of nuclear forces into a drastically different role than had been the case under President Eisenhower. Whether President Ford holds fundamentally different beliefs on strategic nuclear weapons than did his predecessor at this juncture remains to be seen.

The point to be made here is that by no means is it clear that "a President" in office will embrace strategic policies which will best assist "a President" who will succeed him, nor is it clear that his successor will even be desirous of inheriting such policies. On the other hand, for the reasons brought out earlier, it is far from clear that, beyond a differently intellectualized assessment, a new President can do very much toward effecting realistic change in the strategic posture developed by his predecessor.

What is being suggested here is that, at least in the strategic area of our national security policy formulation, *the President*, who is our Commander in Chief and who is, officially, solely, and uniquely responsible for releasing strategic nuclear weapons and controlling their use throughout a period of hostilities, may be severely curtailed in determining and implementing the policy of his personal choice. However, we might go one step further here and suggest that this is the one policy area where the President *should* be constrained, by national opinion, in his efforts to fulfill his constitutionally anointed role. For this is *the* one area where, rightly or wrongly, the nation has sensed and feared its very existence is directly at stake.

In this context, rightly or wrongly, strategic nuclear war seems to be regarded by the nation as too important to be left in the hands of "a President" (who, in turn, has long stated that nuclear weapons

are too important to be left in the hands of the generals). The public reaction to the President's efforts to change and implement new policy has shown that it will not dutifully accept Presidential decisions which relate so crucially to the nation's very survival. And perhaps it might be wise and even best for Presidents to accept this as a fact of life—the life of the nation, as the nation chooses to see it—when they seek to determine strategic policies and new weapon requirements for themselves and their successors.

How Can U.S. Strategic Forces Be Used?

Coming back to the President's query once more—"Should a President, in the event of nuclear attack, be left with a single option?"—Mr. Nixon quite plainly was inferring that, considering the terrible consequences of exercising this option, such a response would be highly incredible (indeed, even irrational). However, left out of the discussion (plus all other discussions on strategic matters by his Administration and its predecessors over the past dozen years) has been the question whether this "single option" ever represented an actually possible response to Soviet nuclear attack on the U.S. Also left out in such discussions has been the question whether alternative options are at all credible and realistic possibilities.

In the past, scenarios on strategic war, which have been set forth for public consumption by the government when it found it necessary to seek public support (which usually was not forthcoming) for certain strategic programs, were predicated on a Soviet massive surprise attack against U.S. strategic forces. Based on U.S. intelligence estimates of Soviet capabilities (but never even suggesting what the Soviet intentions and expectations

might have been, in view of the awesomeness of such an attack and the profoundness, beyond belief, of its consequences), our strategic systems analysts over the years have applied themselves to the extremely sophisticated calculation of Soviet strike outcomes and what the results of the U.S. counterstrike would be.

Happily for all, there seems never to have been a calculated case where the U.S. retaliation against the Soviet citizenry and economy was not of such a horrendous magnitude that clearly the Soviet attack had been irrationally conceived and planned. Ergo, the U.S. had preserved its strategic deterrence against Soviet attack, for obviously this scenario, with its terrible consequences, could not be credible to Soviet planners.

Now there are a number of questions and reservations regarding the efficacy of the myriad assumptions (many of which are highly questionable and imprecise, others spun from whole cloth when factual inputs do not exist) which go into such analyses. In fact, Mr. Nixon expressed his essential unhappiness over such deterrence calculations which, to quote him, are predicated "solely on some finite—and theoretical—capacity to inflict casualties presumed to be unacceptable to the other side." However, aside from such qualms on the validity and accuracy of the U.S. strategic systems analytic process, there is the fundamental question bearing on just what scenario may have interest and significance to the Soviet planning process.

From this standpoint, it is difficult to imagine what the Soviets' scenario might be, but it seems almost inconceivable that a Soviet calculation of a strike against U.S. strategic forces would lead to U.S.-calculated results. In other words, for the Soviet planner to calculate a strike which leads to, say, survival of 20 percent of the

U.S. force, which then results in a U.S. response that destroys 25 percent of the Soviet population and 60 percent of its industry, which then provokes a Soviet countervalue strike against U.S. cities—all this seems absolutely ludicrous. Somehow, considering that, by practically any historical standard, this action would have to be the most momentous military step ever taken, it is almost impossible to imagine that the Soviet planners would accept a confidence factor significantly below 100 percent for the destruction of 100 percent of the U.S. strategic force. It would seem overwhelmingly probable that, for obvious reasons, the Soviet attack would leave the U.S. with essentially none of its "assured" retaliatory capability.

What is being strongly suggested here is that, however a U.S. President may view his assured destruction options, for the Soviets to execute an attack whose outcome allowed him to retaliate even roughly in accordance with his analytically based planning factors seems wildly implausible. So, aside from the credibility of an assured destruction option (which a President did not find very credible), there are serious and valid doubts that it is even feasible or possible.

On the other hand, if assured destruction is both incredible and unfeasible, then what possibilities are there for using our strategic nuclear forces in a meaningful way? Or is it possible that there are no realistic possibilities for use?—in which case the changes in the strategic balance during recent years may have rendered our weapons truly unusable.

Plainly, President Nixon, in questioning the efficacy of assured destruction, was, at that time, seeking other solutions to strategic problems. And in contemplating (in his first Foreign Policy Report) different possibilities that could provide him with the sought-for flexibility, he stated:

the overriding purpose of our strategic posture is political and defensive: To deny other countries the ability to impose their will on the United States and its allies under the weight of strategic military superiority. We must insure that all potential aggressors see unacceptable risks in contemplating a nuclear attack, or nuclear blackmail, or acts which could escalate to strategic nuclear war, such as a Soviet conventional attack on Europe.

With respect to Mr. Nixon's views on the utility of strategic forces, what possibilities exist for using these forces in a manner which would "insure that all potential aggressors see unacceptable risks in contemplating a nuclear attack, or nuclear blackmail, or acts which could escalate to strategic nuclear war, such as a Soviet conventional attack on Europe"?

Below the level of a massive surprise attack, what might the Soviets have in mind as to using their strategic weapons? At this sub-Armageddon level some have suggested that the Soviets might be entranced with the notion of initiating a limited strategic counterforce war which could involve a "war at sea," where an effort would be made to attrite the U.S. submarine-launched ballistic missile (SLBM) capability, or a protracted campaign against our land-based strategic forces—the notion being that the U.S. would be constrained to responses in kind, for fear of the consequences of expanding the conflict into countervalue attacks.

Insofar as the war-at-sea concept is concerned, we have been assured that our Polaris-Poseidon submarines have been and remain an invulnerable force, and thus one is hard pressed to envisage this possibility. However, some argue that the Soviets someday may achieve an antisubmarine warfare (ASW) capability that would tempt them into such an adventure, leading to an antisubmarine warfare contest.

Since, aside from the outcome of this contest, it would seem almost certain that regardless of the psyche of an incumbent U.S. President, such action would provoke the United States into extreme measures toward expanding its strategic capabilities plus others as well (to say nothing of a severance of relations with the Soviet Union), it is difficult to imagine why the Soviets would wish even to contemplate such a move seriously. In all, the notion seems so farfetched as not really to warrant sober consideration insofar as determining the role of our strategic forces in such a confrontation.

With regard to a protracted attack against our land-based forces (it being argued that these forces may become vulnerable to Soviet counterforce attack in view of Safeguard's demise), where the Soviets may have nuclear blackmail in mind (to what purpose has never been made clear or convincing), this is a horse of a much different color, for here we are concerned with thermonuclear weapons bursting on or over the continental United States. Whether or not a given President were willing to enter into a so-called limited strategic counterforce war of some unknown duration (which has been speculated to last weeks or even months), there is the key question: Would he be allowed to?

It seems highly unreasonable to contemplate a public willingness, especially in the absence of any effective civil defense, to tolerate a Presidential decision to prosecute a strategic nuclear war toward some unknown goal. Indeed, such contemplation seems absolutely beyond reason in light of the horror-image portrayals of thermonuclear warfare, at any level, which U.S. Presidents have made public for so many years; for example, as stated by Mr. Nixon in his 1970 Foreign Policy Report: "Today any nuclear attack—no matter how small; whether accidental, unauthorized or

by design; by a superpower or by a country with only a primitive nuclear delivery capability—would be a catastrophe for the U.S., no matter how devastating our ability to retaliate.” What steps would be taken by the nation to force the President to end such hostilities we cannot say, nor can we predict how the President would seek termination. However, from a domestic political standpoint, almost everything points to an extreme national intolerance and unwillingness to accept this mode of nuclear conflict as a credible Presidential option.

Whereas we cannot delve here into the classified aspects of U.S. strategic weapons and the capabilities of the Commander in Chief to control and manage these forces during a protracted thermonuclear exchange, it is appropriate to ask: Will there ever be a President who truly believes he is capable of directing and terminating (on satisfactory terms) such a war? Almost certainly the answer has to be NO!

How can one expect any Commander in Chief of U.S. strategic nuclear forces to possess the knowledge and the intrinsic ability to preside over the battle management of a conflict for which he (1) has no historical precedent to give even a clue as to how military experience and judgment can be applied; (2) has no background to guide realistic planning factors for the performance and reliability of his (untested) weapons, thus it poses an enormous question mark as to how effective or meaningful his management may be; and (3) has no data to provide any insight into what military objectives are relevant toward dissuading the enemy from his objectives? Therefore, apart from the probably overriding political factors working against the possibility that such conflict can take place at all, it seems highly probable that a President would be critically concerned with a minimum use of his strategic weapons (in seeking termina-

tion of conflict) because he is incapable of directing meaningful extensive use.

Just what a President might do to end such a nightmare is impossible to predict or even imagine, but this is a singular function of a given President in such a crisis. To dispense with the problem, one might be tempted to define it away by claiming that no nuclear adversary would even contemplate initiating such a conflict; but this we really cannot do, since the matter of Soviet intentions is a Soviet matter, not ours to judge for them. What to do toward resolving this (hypothetical) dilemma will be discussed later.

Regarding the possibility of a U.S. President's initiating the use of strategic weapons against a nuclear power that has launched an attack against a U.S. ally—for example, Mr. Nixon's case of “a Soviet conventional attack on Europe”—one such appraisal of this possibility came in 1969 from then Secretary of State William Rogers: “Sane national leaders do not initiate strategic nuclear war and thus commit their people to national suicide.”¹ Were we to give official credence to this statement, the credibility of U.S. strategic pledges could fairly be challenged, since a strong affirmation of these pledges would, in effect, cast strong doubts on the sanity of a U.S. President. However, aside from this ploy of using a ranking official's assessment to determine the usability of U.S. strategic forces, there is the question whether U.S. strategic guarantees do have any residual credibility and, thus, whether U.S. strategic forces have any residual use toward deterring attacks on allies or, if deterrence fails, toward enhancing the position of our allies or ourselves, through their actual use against a nuclear power aggressor. Unquestionably, the answer has to be NO!

For many years the U.S. has officially maintained that it has no first-strike capa-

bilities that can effectively disarm the Soviet strategic forces. Consequently, such (ill-guided) action by the U.S. would only subject the nation to Soviet counterattack, with its unthinkable consequences. Clearly, this action would not be in the U.S. interests, would gain nothing, and would serve no rational purpose.

Regarding the possibility that the U.S. might initiate a protracted strategic counterforce campaign against the Soviet Union to force a change of Soviet intentions toward NATO or reduce the effectiveness of the Soviet attack: first, as mentioned, it is far from clear that we can be very competent at this task; and, second, as also mentioned, a U.S. national tolerance for this objective would be extremely low. Therefore, on both counts it is difficult to ascribe credible use to U.S. strategic weapons in such a campaign.

Moreover, regarding these possibilities for strategic weapon employment to fulfill pledges to allies, it is difficult to see how such employment would, in any appreciable way, have any significant effect on the Soviet prosecution of a ground war in Western Europe. The great bulk of Soviet doctrinal literature indicates they are geared to a high-intensity ground war (most probably involving the use of tactical nuclear weapons) of short duration. On this basis, the Soviets, with their Warsaw Pact allies, should be able to accomplish their military objectives against NATO in time to be essentially independent of whatever might result from a U.S.-U.S.S.R. strategic exchange.

In Asia, almost ten years after the first Chinese nuclear explosion, long and often-predicted Chinese strategic nuclear capabilities have seemingly failed to materialize—that is, in any form that U.S. intelligence has recognized and verified. The orbiting, on two occasions, of a payload of several hundred pounds leaves

little doubt that Communist China had the physical ability to field a strategic system of intercontinental range. However, a lack of specific data led the Defense Department, in 1973, to state: "It is difficult to assess either the strategic nuclear threat posed by the People's Republic of China or how that threat will evolve through the 1970s."²

Considering that the Chinese began their nuclear weapons program by breaking a testing pattern established by other nuclear powers—i.e., using U-235 in contrast to plutonium used by the U.S., U.S.S.R., England, and France—one can speculate that, in the development of their intercontinental strategic weapon systems, they might not choose to emulate their predecessors. Certainly, in view of the vast strategic superiority the U.S. would enjoy at the beginning of China's strategic deployments, why would she wish to follow in step and thereby provide fixed vulnerable targets which, in turn, might provide high incentive for a U.S. disarming attack?

In this respect, might not the People's Republic of China (PRC) wish to modify their satellites to achieve a nuclear bombardment capability? China is not party to the United Nations Space Treaty, which forbids such a capability. Moreover, as a result of the first Strategic Arms Limitation Talks (SALT I) the U.S. has been sharply limited toward deploying antisatellite systems because of the antiballistic missile (ABM) connotations of such systems. Other approaches might be the deployment of hidden mobile intercontinental ballistic missiles (ICBM's) or sea-based missiles (concealed in merchant ships), which could suffice to provide an invulnerable force.

The point to be made is that what might emerge in the Chinese strategic arsenal remains to be seen; and, based on

our apparent inability thus far to identify PRC intercontinental systems, it might not be seen at all. Therefore, we cannot dismiss the possibility that the Chinese are building and deploying a minimum deterrent strategic force, concealed until an appropriate time for revelation, that could succeed in blunting U.S. strategic nuclear guarantees to Asian allies. For, as Mr. Nixon's 1970 Foreign Policy Report predicted catastrophe from "any nuclear attack—no matter how small," were the Chinese to have a small, secure, strategic nuclear force, the U.S. nuclear shield promised by the Nixon Doctrine would be lacking in credibility and, indeed, rationality.

To summarize this discussion: It would appear that the U.S. is fast approaching, if it has not already reached, the point where, for all intents and purposes, its strategic nuclear weapons are politically unusable. There seems to be no doctrine or strategy for the use of these weapons which is politically acceptable or rational. This is not to say they have lost their value, for obviously the nation's predicament without them would become intolerable. What is being implied, however, is that their value—to a President and to his country—must be evaluated on a basis of nonusability. And, in turn, the design of our strategic force should be predicated on an acceptance of this premise. In fact, such forces might best be designed so that their existence becomes a matter of national acquiescence and inattention—not debate and concern, neither of which has solved or helped our strategic development efforts, let alone being of constructive assistance toward resolving our strategic issues. In other words, the U.S. might best forego new strategic policy formulation and instead maintain a "non-policy" for its nonusable weapons.

What Kinds of Strategic Forces Should We Have?

During the 1950s the groundwork was laid for a "rational" methodology to analyze complex problems quantitatively by the technique of systems analysis, and during the early 1960s this approach was incorporated into the Defense Department planning process. Since then this process has largely dominated the decisions made on new strategic weapon systems. In essence, this technique was purported to be able to analyze, in exacting detail, the complex interactions of opposing strategic forces; and, as so presented, it was seized upon by the Defense Department as a powerful tool for evaluating the utility of our strategic forces and determining what new measures should be taken to ensure that these forces best support U.S. strategic nuclear policy.

It would seem highly questionable, at the very least, to presume that the technical and military aspects of strategic warfare can be sufficiently understood so that meaningful quantitative inputs can be fed into an analytical model of such conflict. As discussed earlier, our knowledge of this untested, inexperienced domain of warfare makes quite dubious any prospects for using strategic forces in any predictable controlled fashion, and a President should be chary of scholarly advice that he is at all capable, in his role as Commander in Chief, of exercising those forces to achieve a predetermined objective. Moreover, if his uncertainties on U.S. strategic weapon performance are high, then his uncertainties regarding Soviet operational capabilities must be considerably higher. Yet, it is clear that the analytical community has had considerable impact on U.S. strategic force development decisions and, presumably, on Presidents involved in such decisions.

In this vein, the "logic" of strategic systems analyses performed in the Defense Department dictated, several years ago, that because of a growing Soviet large missile threat (the SS-9) the problem of U.S. Minuteman missile vulnerability could best be dealt with through the Safeguard ABM system. However, as discussed here, the decision to accept this analytically based recommendation (a) produced a sharply divisive national debate; (b) led to mounting Congressional suspicions and program cutbacks as it became clear that realization of the (analytically) defined and required performance would force costs up substantially; (c) resulted in an apparent need to redefine the SS-9 threat as it became apparent that the Safeguard program was being delayed and would not produce the originally required capability; and (d) ultimately became victimized by agreement in SALT.

Perhaps the paramount lesson to be learned, with respect to decisions on strategic weapon development, is that recommendations should not be based on theoretical divinations of offense-defense relationships, which presume to gauge a weapon's utility in the framework of strategic exchanges and war outcomes and in terms of specific desired objectives—such as an assured destruction level. Rather, a preferable approach would appear to be to discard notions of operational utility calling for quantitative determinations of performance and achievement and seize upon new weapon systems whose characteristics deny the possibility for such determinations. Or, putting it another way, these characteristics should be of such a nature that the vulnerability of a proposed system to enemy attack cannot be seriously questioned because it cannot be known and, therefore, cannot be analyzed. In other words, in the process of defining a new weapon system, why bother to define

a new problem, or even admit to a going problem, when we have ample evidence that the nation reacts apprehensively and largely negatively to the exposure of problems vitally related to its very survival?

In effect, the Polaris program has been a cardinal example of a system whose vulnerability cannot be calculated. Whereas fixed ICBM and bomber bases have been seriously questioned in public, regarding their vulnerability to Soviet ballistic missile attack, with the government officially admitting to worrisome levels of vulnerability and seeking (unsuccessfully) new defensive weapons to significantly reduce such vulnerability, essentially no such questioning has been leveled at the security of our Polaris submarines. Here the government, happily so, has continually vouchsafed the invulnerability of this system to possible Soviet ASW capabilities. And it is noteworthy that most of those who have voiced the strongest misgivings as to such systems as Safeguard and the B-1 bomber have been practically unanimous in their acceptance of the submarine-launched ballistic missile concept.

Furthermore, it should be noted that our Minuteman ICBM system is now more than a dozen years old, and since this development took place, no new ICBM program has been initiated. Our B-52 force is now some twenty years in-being, with no clear indication that a new bomber—i.e., the B-1—will be approved for production. On the other hand, at this juncture a new generation of SLBM's, the Poseidon, has entered the submarine force, and funding has been allotted for an extremely expensive new class of even more-advanced missiles and nuclear-powered ballistic missile submarines, the Trident system.

With these observations in mind, if we are seriously interested in a new land-based strategic weapon system, what

might its preferred characteristics be so that its necessity would essentially be obvious and undebatable, rather than questionable and provocative of intense national debate? To address ourselves to this problem, we might first review the discussion in the previous section, which concluded, in effect, that there are no rational uses for strategic weapons, and then ask ourselves the following questions:

If our strategic weapons have deterrent value only and provide no means for rational response in the event of an enemy attack, then what's the hurry for this response? What difference does it really make whether the response takes place within minutes, or an hour after the attack, or twelve hours, or even a day?

Going one step further, there long has been a Strangelovean fear that our strategic weapons may be launched without authorization from the President (who might well pray that he could bank on authorization from someone higher up the ladder than himself). On this basis, might we not be best served not only by seeking a built-in delayed response in designing the system but, moreover, by making it essentially impossible for the military operators of those weapons to respond at all unless a specific Presidential authorization takes place? In other words, can we design a weapon system whose security is not dependent upon the trustworthiness of the military custodians, high as it has been, but is ensured because the weapons lack certain basic components that make them operable? Can we design a weapon system that is absolutely safe because there is no fail-safe mechanism that might conceivably fail?

What we seem to be searching for, in determining preferred characteristics, is a system whose survival, like that of our nuclear missile submarine force, is held to be guaranteed because we are unable to

convince ourselves to the contrary. That is to say, we are looking for a new force of strategic weapons that cannot be put into an offense-defense "systems analysis" model because to modelize the problem makes it possible to conjure up assumptions as to enemy strike capabilities that can seriously threaten the force. (This, of course, has been the unhappy situation with our present land-based systems, where the results of such analyses have thrust these systems into sharp contention, internally and publicly.) In addition, for the reasons just mentioned, we also should prefer a force of weapons which, having no credible military utility, cannot possibly be used by the military operators unless express steps are taken by the President to make it possible for those weapons to become operable.

In this requirements context, what might be attractive is a land-mobile ICBM of drastically different design and purpose than has been considered thus far and apparently rejected—presumably on the basis of comparative systems analyses which failed to show sufficient gains in cost-effectiveness for this approach. Specifically, we might give consideration to a very small, cheap, road-mobile ICBM that could be deployed, inconspicuously and inoperably, in very large numbers throughout the U.S. countryside.

Missile propulsion technology (essentially unclassified) has progressed to a point where it is entirely feasible to contemplate an ICBM weighing on the order of 10,000 pounds, which, having no vital (security) components, could be carried around in inconspicuous vehicles with minimum crews (also inconspicuous). By "having no vital (security) components" the implication is that, in its normal peacetime deployment, the missile would contain no guidance and control package and thus, in effect, would be incapable of

being launched on an intercontinental trajectory; in addition, it would be devoid of its nuclear warhead. It would be essentially an unclassified rocket booster with no brains and no worrisome nuclear explosive.

In this configuration, the problem of unauthorized launch would not exist, nor would there be a worry that an accident might trigger a low-order nuclear detonation or spread radioactive contamination over the area or necessitate, because of security considerations, an amassment of government personnel to seal off the area—almost certain to produce alarm and concern. In fact, it is not at all clear that such accidents, if they did occur, would be cause for any undue attention, since solid propellant materials are extremely difficult to ignite without a very high-temperature source.

The guidance and control package, plus the nuclear warhead, would be contained in a small, light re-entry vehicle (RV) which could be readily attached to the booster. Those RV's would be stored in a large number of secure sites, with aerial means, such as helicopters, to dispatch them quickly from these sites in the event our early-warning system detected an attack under way. (In essence, this method would represent a launchless substitute for a launch-on-warning procedure, which is officially regarded as unacceptable as a means to cope with a surprise Soviet missile attack.) Or, like the boosters, the RV's could be made mobile and, from time to time, shifted from place to place (on government reservations), with no apparent way for the Soviets to observe this pattern.

As to which RV's would be sent to mate with which boosters and how soon (or if at all, should the warning turn out to be false)—this would be the White House command-control decision. However, con-

sidering the basic invulnerability of such a system, barring Soviet irrationality (or insanity, as inferred by Secretary Rogers's remarks), it is almost impossible to imagine circumstances that might engender the need for such a decision.

Now that the SALT I Treaty on ABM limitations has seemingly laid both sides open to ballistic missile attack, the problem of survival of ICBM's and SLBM's no longer has to include penetrability through enemy defenses. Therefore, the land-mobile missile concept just discussed, as well as submarine-launched missiles, needs to be evaluated primarily only in the framework of its basing system.

As to the force size of strategic weapon systems which we believe are essentially immune to enemy attack and, therefore, whose full-scale employment can be guaranteed, this is a truly unsolvable problem. Were we to have such systems, not only would we find it almost impossible to divine rational enemy motives for strategic attack against the U.S., but we also would find it extremely difficult to determine what our retaliation should be to presumed irrationality on the enemy's part. Perhaps the pragmatic solution to force size, under these unquantifiable conditions, would be to continue to uphold some version of response based not on the deterrent calculus of assured destruction (which has been deemed to be unsatisfactory) but rather on a level of retaliation against the Soviet national existence which we can convince ourselves would represent a credible deterrent to possible Soviet irrationality. Thus far, we have fashioned and rationalized our strategic forces on the basis of deterring a planned, seemingly rational (to the Soviets) attack having a calculable outcome.

In this respect, were there a national willingness to support strategic budgets at the present level, unquestionably we could

guarantee a level of retaliation that would provide a strong deterrent to possible irrational trends in Soviet strategic planning. And we would intuit that a U.S. strategic force which, indeed, had the trappings of invulnerability would also provide a strong disincentive for the Soviets to expand or improve their own land-based strategic offensive forces beyond current levels—on the basis that our forces clearly posed no threat to their forces; and theirs, allegedly designed to exploit U.S. fixed-base vulnerability, no longer would hold military utility against ours.

With respect to the future of SALT, perhaps a better way to influence the Soviets' decision-making on strategic forces is to present them with new and different U.S. forces that throw into serious question the Soviet ability to achieve significant counterforce capabilities. It might well be that the problem of strategic arms control is best addressed by exploiting advanced technology for new systems and letting the other side react, rather than try to negotiate suppressions of both technology and new systems.

Santa Monica, California

Notes

1. Address before retired diplomatic and consular officers, Washington, D.C., November 1969.

2. Secretary of Defense Melvin R. Laird's Annual Defense Department Report, FY 1973. (Secretary Schlesinger's FY 1975 report reaffirmed this

uncertainty but noted that "The Chinese are clearly sensitive to the importance of second-strike nuclear capabilities and are making a considerable effort to minimize the vulnerability of their strategic offensive forces.")

THEY WERE GOOD OL' BOYS!

*An Infantryman Remembers An Loc
and the Air Force*

MAJOR JOHN D. HOWARD, USA



On 25 May 1972, a U.S. Army sergeant, who was an adviser to a Vietnamese Ranger group, was "med evac-ed" out of An Loc. On his arrival in Lai Khe for treatment and transportation to the Third Field Hospital, he was queried on aspects of the fighting. When asked what he thought about the support received from the U.S. Air Force, he succinctly summed up what all the An Loc advisers felt:

" . . . they're good ol' boys!"

FEW BATTLES are recorded in the history of modern warfare where air power has played a more decisive role in the outcome than it did in the besieged provincial capital of An Loc in the early stages of the spring 1972 offensive by the North Vietnamese Army (NVA). During a three-month period commencing in April, the United States Air Force provided the Vietnamese garrison and its handful of U.S. advisers with their major means of fire support, their primary source of resupply, and massive interdiction of enemy infiltration routes. This triad of support not only broke the NVA's stranglehold on the once prosperous rubber-plantation town but also destroyed the better part of three divisions that would have been poised to move on Saigon, some 90 kilometers to the south, had An Loc fallen.

The attack on An Loc was only one aspect of General Vo Nguyen Giap's strategy to gain Hanoi's long-sought political ends in the Republic of Vietnam (RVN). Unlike the Tet offensive of 1968, Giap chose not to use the Viet Cong (VC) insurgents as a main attack force or depend upon a peripheral strategy that necessitated a popular uprising in the south.¹ Instead, he directed conventional attacks, emphasizing shock action and firepower, in Military Regions (MR) I, II, and III involving the commitment of practically all North Vietnam's regular forces.

These division-size elements, well balanced in armor, infantry, and artillery, were oriented toward the destruction of RVN's armed forces. Apparently, the basis for the North's action revolved around the assumption that Vietnamization was an abysmal failure and that the U.S. public was so averse to continued involvement in the war that President Nixon would be unable to bolster Nguyen Van Thieu's government.² The importance of the upcoming U.S. Presidential elections as an additional constraint on decision-making was not lost on the NVA planners. A similar situation had emerged in March 1968 when the North Vietnamese and the VC suffered a staggering military defeat but reaped untold political advantages from the enervation of Saigon's chief ally. Now, given the maximum use of NVA military power and the political climate in the United States, the probability of success of the 1972 NGUYEN HUE offensive from Hanoi's vantage point seemed very high.

Prelude to a Battle

An Loc, the governing seat of Binh Long Province, sat astride Highway 13 amid Vietnam's most fertile stands of rubber trees. Because of its proximity to Cambodia and the nearby enemy base areas, its population of 15,000 had endured the rigors of war since the early



Figure 1. The North Vietnamese spring offensive, NGUYEN HUE, 1972

1960s. In February and early March of 1972, intelligence sources had identified three NVA divisions in the Cambodian Krok-Chup plantation areas near the border of Tay Ninh and Binh Long Province. RVN Lieutenant General Minh, the III Corps commander, and his staff were sure

that the enemy planned an attack of major proportions with these troops but could not determine the specific targets. The NVA tried to nurture suspicions that any thrust would be directed at Tay Ninh by mounting a major attack against an ARVN army (ARVN) fire-base at Thien Ngon on Highway 22 on the night of 1-2 April. This action along a traditional invasion route drew attention away from Binh Long Province and covered the movement of three divisions out of their base areas and into assembly areas near their initial objectives.³

The 5th VC Division began the first phase of the MR III offensive by attacking the district town of Loc Ninh in the predawn hours of 5 April. By the afternoon, the ARVN resistance centered on two compounds at both ends of a small airstrip. Here a few U.S. advisers, all of whom were either killed or captured, kept the enemy at bay for the next two days through a combination of well-placed air strikes and AC-130 Spectre gunships. On 6 April, USAF fighters stopped at least three mass attacks on the compounds with what would later be known to even the Vietnamese as "shake and bake," a combination of conventional bombs, cluster bombs (CBU), and napalm. The next day, sheer force of numbers took its toll. Notwithstanding superhuman efforts of the U.S. personnel on the ground, including Major General James F. Hollingsworth, commander of Third Regional Assistance Command (TRAC), and a considerable number of forward air controllers (FAC), the outposts were overwhelmed.⁴

Although the South Vietnamese suffered a blow at Loc Ninh, the trauma of that day set a precedent that would serve the ARVN well in future operations. It was evident that the leverage provided by U.S. air power in Binh Long Province would



be a function of three factors: the skill of J.S. FAC's from the 21st Tactical Air Support Squadron (TASS) and the many fighter pilots that would fly the missions; the continual presence of General Hollingsworth or his deputy, Brigadier General John R. McGiffert, to provide the command impetus for sustained support; and the U.S. Army advisers, who acted as the link between the ARVN and the USAF. Soon after the fall of Loc Ninh, TRAC's Commanding General made the crucial decision to leave the advisers with their counterparts in An Loc. This action maintained the quick channel of communication between air and ground forces and allowed for on-the-spot adjustment of close strikes. During the two major attacks on the city, this contact became extremely important when some aircraft had only limited time on station and when others were putting ordnance as close as twenty meters from friendly troops.

The Siege—Phase I

While the first twelve days of April were relatively stable, there were ominous signs of hard times ahead. On 6 April, the 7th NVA Division succeeded in sealing off

An Loc by establishing a major roadblock along Highway 13 north of Chon Thanh, putting the resupply onus on aviation assets. The logistical situation was further complicated by streams of refugees and military survivors from the Loc Ninh battle. The fighting in the northern district had engulfed Task Force 52, a two-battalion force between An Loc and Loc Ninh; approximately 600 of the original 1000 managed to reach the "safety" of An Loc.⁵ However, any military stragglers were an asset and could be used to strengthen the town. Following a conference with his military advisers on 7 April, President Thieu decreed that An Loc would be held "at all costs," and he allocated additional units to be used in its defense. The 5th ARVN Division hastily assembled its forces in the town and was reinforced by the 3d Ranger Group. On the afternoon of 12 April, nine infantry battalions in various states of readiness were prepared to follow the President's dictum.⁶

By this time, intelligence sources indicated that the NVA would make a determined effort to take An Loc very soon. Patrols on the previous days had reported increased contacts and the movement of



large enemy forces into the area, while refugees and stragglers claimed they had seen many enemy tanks in the vicinity of the city. Within An Loc, there was a noticeable increase in enemy artillery fire and definite attempts to deny the ARVN use of aerial lines of communication (LOC).

Fortunately for the garrison, these indicators were properly evaluated by Generals James Hollingsworth and John McGiffert. On the afternoon of 12 April, they planned B-52 and tactical air strikes for the following day on suspected enemy troop locations and along probable avenues of attack. Soon after midnight, it became obvious that an attack of major proportions was imminent; reports of armor movement and increased shellings were coming from security forces around the perimeter. The impending attack brought a Spectre on station before dawn, but it could not readily acquire the signature of any large troop concentrations or armored vehicles; by first light, the mission was diverted to provide close support for the forward defense positions where

pressure was steadily building. The main attack was launched from the north at 0600 hours and consisted of an armor thrust, which drove the ARVN out of the northern half of the city. The defenders withdrew in good order in the face of numerical superiority, ably assisted by two factors: the USAF and VNAF air support and the NVA's ineptness in initiating combined arms attacks.

As the enemy pressed forward, his momentum was shattered by well-executed air strikes that stripped the infantry from around the Russian-made T-54 and PT-76 tanks and isolated them without protection in the narrow city streets. While the B-52s, F-4s, and A-37s struck the infantry well forward of friendly positions and prevented other forces from exploiting the success in the northern sector, ARVN soldiers were able to attack the tanks with relative impunity.⁷ During the confusion, one North Vietnamese tank crew demonstrated that even the NVA has that small percentage of people that "don't get the word." Thinking that the town was

secured, they rolled down the city's main street with all hatches open, completely oblivious to the fact that the soldiers in the fighting positions were ARVN, not NVA. After they had moved all the way through the city, a member of the Territorial Forces retained enough presence of mind to knock out the tank with an M-72 LAW (light antitank weapon).

For the remainder of April 13th and the following day, the NVA resorted to heavy rocket and artillery fire on the city but could not mount another ground attack to exploit the foothold gained in the north. Although one attempt was made on the 15th, tac air thwarted any further gains. General McGiffert commented on the effectiveness of the B-52 strikes and the preplanned tac air sorties of the 13-15 April period: "I really believe that without these the city would have fallen because I think the infantry would have gotten in with the tanks."⁸ Patrols later confirmed that more than 400 enemy dead were found following the battle, half of whom were killed by air (KBA).

reinforcement

Coincident with the heavy fighting was the Corps Commander's attempt to reinforce the garrison with the 81st Airborne Ranger Group and the 1st Airborne Brigade. The Airborne Brigade's mission was to secure the high ground southeast of the city. This plan was short-lived because the NVA felt it mandatory to make good on the promise to take An Loc before 20 April. Subjected to overwhelming attack on "Windy Hill" and Hill 169 on 19 April, the 1st Airborne Brigade withdrew into An Loc and assumed responsibility for the southern portion of the perimeter while the 81st Rangers were moved into the northern sector. On the night of 22 April,

the 81st Rangers succeeded in eliminating some of the enemy lodgements in their new area. Their aggressive attack was supported by a PAVE AEGIS Spectre, whose 105-mm cannon ferreted the NVA out of the rubble of the destroyed buildings. Sergeant First Class Jesse Yerta, light weapons adviser to the group, employed the Spectre's fire in the form of a rolling barrage. In order that the AC-130's fire control officer would be able to keep the ordnance right in front of the friendly troops, Sergeant Yerta then accompanied an assault squad and, in addition to maintaining radio communications, fired scores of small pen flares to provide a beacon from which the gunship could offset its fire.⁹

resupply

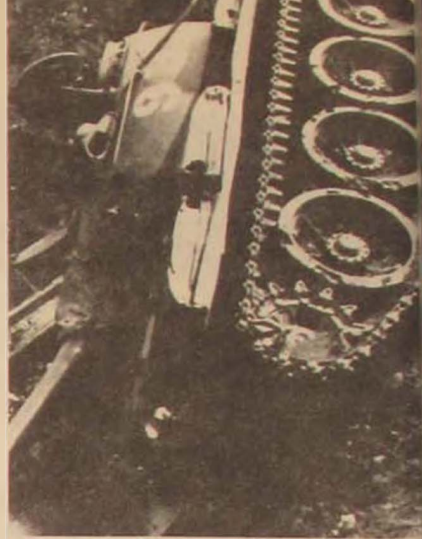
Although An Loc had withstood the enemy's first determined attempt at victory, Colonel William Miller, senior adviser to the 5th ARVN Division and the senior American in the city, assessed the situation as follows:

The division is tired and worn out; supplies minimal, casualties continue to mount. Wounded a major problem, mass burials for military and civilians; morale at a low ebb. In spite of incurring heavy losses from US air strikes, the enemy continues to persist.¹⁰

The resupply of the garrison had been the exclusive responsibility of the U.S. Army and the Vietnamese Air Force (VNAF) prior to this 17 April report, but during the heavy fighting it had been sporadic at best. When a VNAF C-123 was lost on 19 April, aerial resupply became the sole domain of USAF C-130s. Initial efforts proved that this would be no easy task; the NVA had all avenues of approach covered with massive .51-caliber, 23-mm, 37-mm, and 57-mm fire and used an

The Siege of An Loc

North Vietnam's determined attack by regular forces in the spring of 1972 sought to destroy the armed forces of the Republic of Vietnam. It was stopped short of Saigon by an equally determined three-month stand at An Loc. There much of the NVA's three divisions was destroyed by U.S. air power, which provided fire support, resupply, and interdiction of enemy infiltration routes. Reconnaissance photos show enemy tanks damaged near An Loc (right and below) and the devastation in the heart of the city (opposite) caused by mortars and artillery, not by aerial bombardment.





DAMAGED TRUCK

DAMAGED T-60/63

DAMAGED TRUCKS

DAMAGED T-60/63 TANK

early-warning network of spotters, who notified the firing units of incoming aircraft. Daylight low-level runs drew heavy NVA fire, and two attempts made (18 April and 23–26 April) were justifiably terminated after severe aircraft damage and several losses. The interim experimentation with high-altitude low-opening (HALO) systems resulted in less aircrew exposure but proved unsatisfactory due to parachute rigging malfunctions.

Colonel Andy Iosue, commander of the 374th Tactical Airlift Wing, instituted low-level night runs in order to skirt some of the problems encountered with other methods; these missions still encountered heavy ground fire and were further complicated by difficulty in recognizing the drop zone (DZ). Although it was marked with lights, the signals were easily masked



by anti-aircraft tracers, artillery flashes, and the fires in the city.¹¹ On 3 May, Colonel Miller requested that these missions be scrapped since he felt the NVA was benefit-

ing more by drops that went astray than was the ARVN through its recovery systems.

The arrival of U.S. riggers at Tan Son Nhut Air Base prompted the return to HALO techniques and the use of high-velocity drogue chutes. Notwithstanding the restricted size of the DZ and the minimal area that was in friendly hands, the recovery rate rose significantly. As DZs were shifted to accommodate individual units, it was commonplace to recover a pallets. After calling for a resupply directly on its position, the 6th Airborne Battalion spent the better part of one afternoon running from sixteen 2000-pound bundles of "chicken boned," clay more mines, and Uncle Ben's instant rice.¹²

Recovery of food and ammunition was only one aspect of An Loc's resupply operation. Once the bundles were gathered up, an equitable, orderly distribution system became paramount to continued success. During the first USAF attempts some recovery efforts went unreported when men attempted to hoard pallets of food. Only after the Vietnamese commander placed Colonel Luong of the 1st Airborne Brigade in charge of the DZ and distribution did the logistical operations begin to function normally.

evacuation

Problems in receipt and distribution of supplies were exacerbated by a lack of VNAF "med evac" missions, the ground commanders in An Loc and at III Corps having virtually no control over them. By 15 April, medical supplies were critically low, and sophisticated hospital facilities were nonexistent. So, without evacuation soldiers who were lightly wounded often had to have limbs amputated, and those who sustained serious wounds simply could not be saved. On the few occasions

When the VNAF helicopters did come into the landing zone (LZ), they hovered four to five feet off the ground, allowing only the wounded who could walk and climb—the “olympic” wounded as one adviser called them—the opportunity to be evacuated. For litter cases even to be carried to the LZ was an exercise in futility. The lack of VNAF support for its ground forces was painfully illuminated by the U.S. helicopter insertions for medical evacuation and resupply of advisers. Finally, General Minh prevailed upon General Hollingsworth to execute a joint U.S.–Vietnamese evacuation mission under the command of a U.S. officer to show the VNAF how it was done. Although the operation was only partially successful, Colonel John Richardson of the 12th Combat Aviation Group set the example for the VNAF pilots, who, despite the active antiaircraft environment, succeeded in getting three or four ships a day thereafter into and out of An Loc.¹³

The Siege—Phase II

By the end of the first week in May, the resumption of near-normal aerial resupply and some limited medical evacuation indicated the weaknesses in NVA strangulation and starvation tactics. Although more than 1000 artillery rounds per day had been expended on the city for several weeks, there were no signs of capitulation. Undoubtedly, the NVA felt it was imperative to mount a major attack before the ARVN became much stronger. The thirteen battalions in An Loc numbered 5100 men, but at least 1000 were wounded and ineffective.¹⁴ To the south, the 21st ARVN Division and the 3d Airborne Brigade were attempting to reopen Highway 13 against stiff opposition from the 7th NVA Division. Although these units made little real progress in their attempts to relieve

An Loc, their potential nevertheless concerned the NVA high command.¹⁵

By now, the NVA controlled all high ground around the city. The plan was to cut the city in two, then defeat each enclave in detail. In order to minimize the effect of the massive U.S. air support that had stymied the previous operation, anti-air weapons would be moved with the assaulting echelons to provide the necessary defensive “umbrella.”

As the time for attack drew closer, enemy activity in the form of probes and shellings increased, and, as General Hollingsworth had predicted, on the morning of 11 May “it hit the fan.”¹⁶ The assault began at 0530 hours with two spearheads of tanks and infantry in the main attacks from the northeast and the west. Although they became separated, they succeeded in making two significant penetrations of the perimeter in an attempt to link up in the center of the city. Fortunately for the defenders, execution of plans was not an NVA forte; the tank crews appeared to be disoriented, stopping frequently and moving slowly through the streets. All attacked without external fuel drums, and many ran out of gasoline before they had expended their ammunition.¹⁷ This gave the ground commander, Brigadier General Le Van Hung, time to move the 5th Airborne Battalion into the gap between the two salients. The western salient was attacked by VNAF A-1E Sky-raidiers, but the northern penetration was too narrow for effective bombing. However, the more accurate Spectre gunships with 40-mm and 105-mm cannons silenced many of the tanks and gave the ARVN time to establish defensive positions to contain any further NVA advances. The defenses held, and the two penetrations proved to be the high-water mark of the North Vietnamese offensive in An Loc. (Figure 2)

WHILE THE ARVN fought tenaciously on the ground, the U.S. Air Force provided the weight that blunted the attack. This clout was obtained by General Hollingsworth, who had appealed to General Abrams for maximum B-52 and close air support allocations. Working from a broad spectrum of intelligence sources, he began his lobby efforts for USAF assets on 9 May. His endeavors reaped dividends because the big bombers started pounding the NVA as the attacks were initiated. One flight hit the enemy every 55 minutes for 30 hours; as Communist units were moved, the Strategic Air Command's advance echelon (ADVON) at Tan Son Nhut provided the flexibility to make changes in the preplanned target "boxes" while the B-52s were en route to An Loc.¹⁸ Lieutenant Colonel Art Taylor, Senior Adviser to

— ARVN Blocking Positions
 — Limit of the NVA Advance

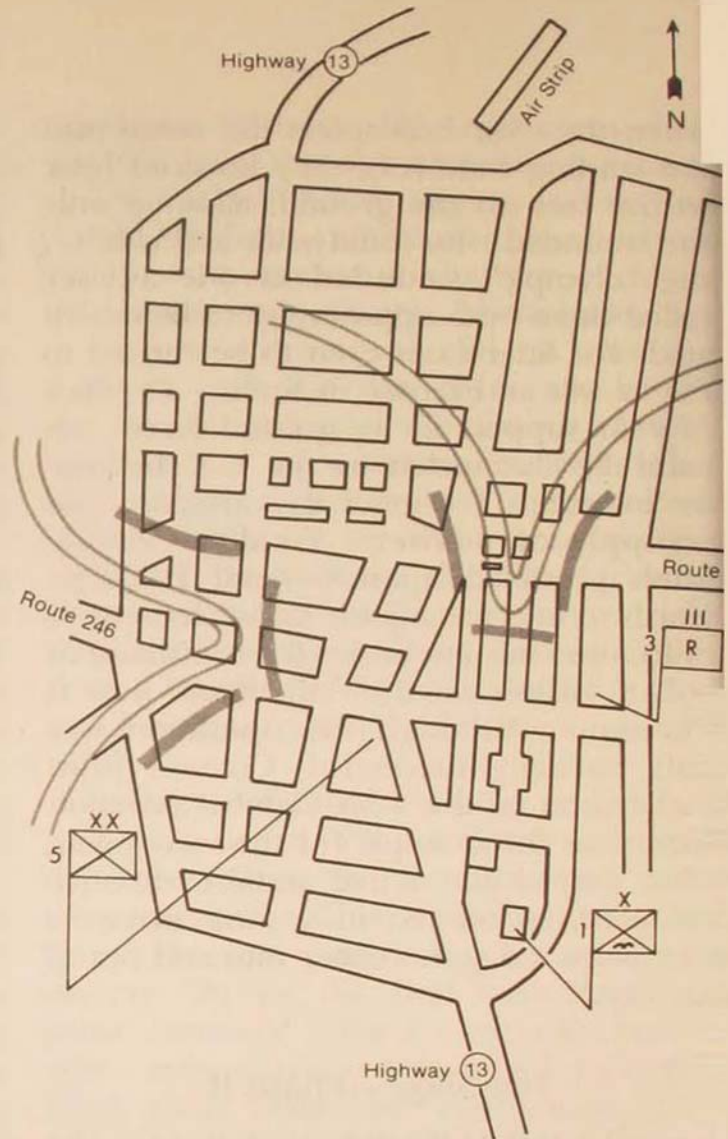


Figure 2. The NVA's farthest advance in An Loc, 11 May 1972

the 1st Airborne Brigade and an infantryman in the Korean War, later said that neither he nor the Vietnamese had ever seen a more awesome display of firepower.¹⁹

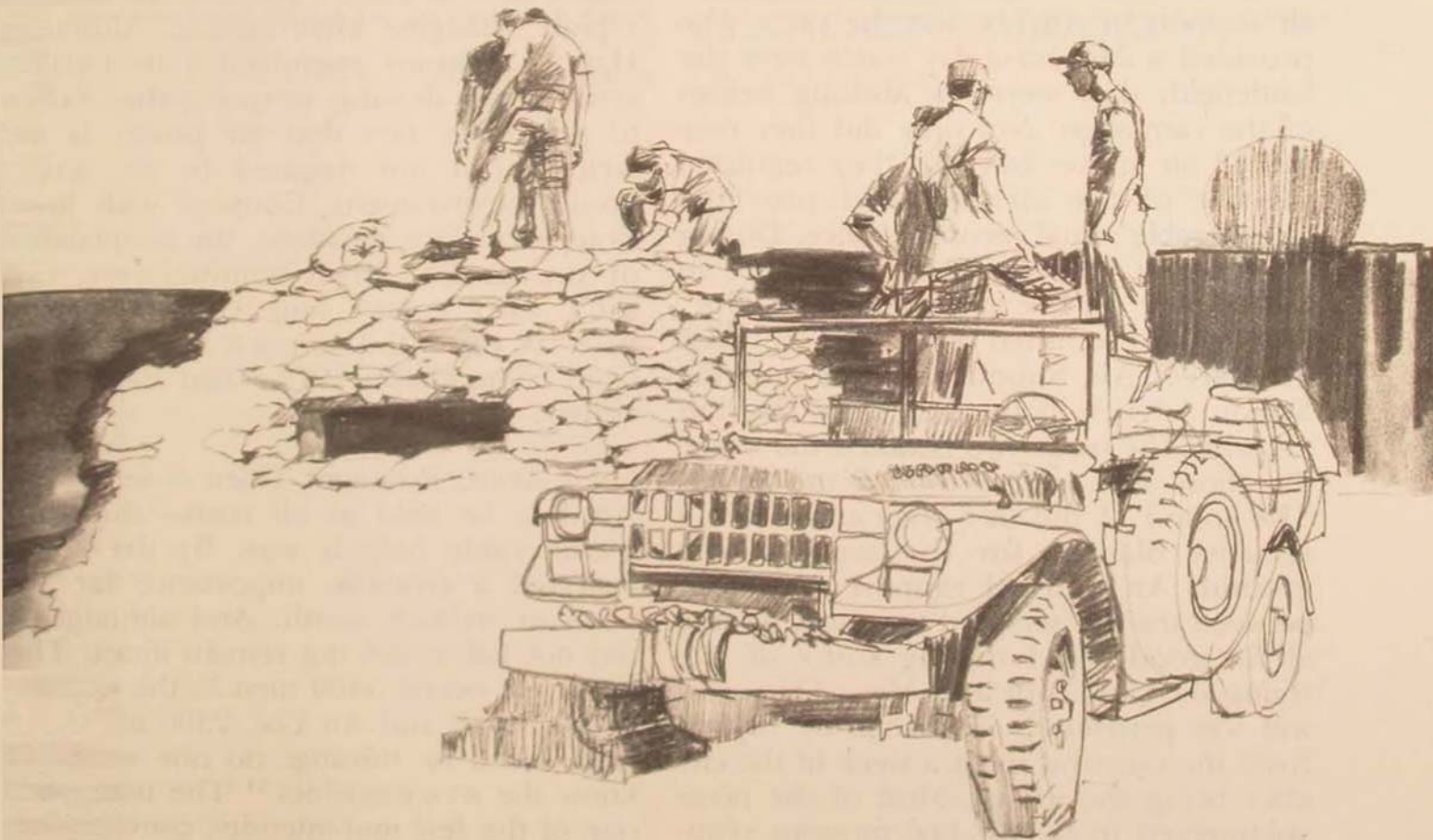
Complementing the use of B-52s in a close support role was the unparalleled assistance of tactical aircraft. On 11 May nearly 300 sorties were flown in the face of some of the heaviest anti-aircraft fire ever faced in South Vietnam.²⁰ Men on the ground were lavish in their praise of the FAC's from the 21st TASS and the A-37 pilots from the 8th Special Operations

Squadron (sos) at Bien Hoa. On one occasion, Lieutenant Colonel Gordon Weed, the sos squadron commander, made two passes at rooftop level through heavy enemy flak to destroy a T-54 tank that was threatening the 5th ARVN Division command post (CP).²¹ Stopping the NVA was not without its price: on 11 May alone, the clusters of enemy air defense weapons downed four Air Force and Army aircraft.

On the morning of 14 May, while attempting to assist in the reduction of the enemy holdings, SUNDOG 07 (i.e., First

Lieutenant "Pep" McPhilips) received an on-the-ground orientation of the conditions in An Loc. A missile struck the tail boom of his Cessna 02 and forced him to bail out over the rubber trees south of the city. Because of the close proximity of enemy forces, the 5th Airborne Battalion nearly lost the footrace to get McPhilips ahead of the NVA. An extraction could not be arranged for several days, so he occupied the bunker of the 1st Airborne Brigade CP and was fully indoctrinated through "participation" training in the U.S. Army's role in the defense. Later, in an appropriate ceremony, he was awarded the Vietnamese parachutist badge—novice level.

For the remainder of May, the situation evolved into attrition tactics, with both attacker and defender exhausted from their previous efforts. Except for one armor attack along Highway 13 from the south on 23 May, the NVA turned its attention toward continuing the isolation of the garrison by countering any relief columns. The 21st ARVN Division's attempts to reopen the highway had become hopelessly bogged down despite considerable U.S. air support. Finally, in an attempt to break the stalemate, the reconstituted 6th Airborne Battalion conducted an airmobile assault into an LZ ten kilometers south of An Loc. Its mission was to link up with and reinforce the city's



defenders. After heavy fighting with the 7th NVA Division, contact was made with the 8th Airborne Battalion on the afternoon of 8 June.²² In the following days, 1-48th ARVN Regiment and the 7th ARVN Regiment eliminated the last remnants of enemy forces in the western and northern sections of the city while reinforcement missions and medical evacuations began to be flown on a daily basis. By mid-June the defensive perimeter had been expanded to encompass most of the outlying hamlets and commanding terrain that surrounded the city. The strength of the garrison was now almost 7600, and though there was no formal proclamation of victory until later, the siege was broken.²³

Reflections

The keystone in the application of close air support in An Loc was the FAC's, who provided a 24-hour-a-day watch over the battlefield; they were the unsung heroes of the campaign. Not only did they control all air strikes but also they regulated the use of the airspace and provided considerable visual reconnaissance. During the heaviest fighting, three FAC's were in the air over An Loc at any one time. One, the "King" FAC, acted as the link between the Direct Air Support Center and the Senior Adviser in the 5th ARVN Division CP, while the other two handled the actual direction and adjustment of the strike. The sound of the O2's engines became a security blanket for the men on the ground. An unusual rapport developed between the advisers and the FAC's, serving all in good stead during some of the trying days of April and May. This good will was particularly enhanced by reports from the FAC who spent a week in the city after being shot down. Most of the pilots volunteered to fly An Loc missions regu-

larly instead of rotating to less taxing operations. Their knowledge of the area facilitated target location and strike adjustment, since reference could be made to terrain features or landmarks that were well known or had figured prominently in other fighting. Many advisers who had one or two previous tours in RVN were surprised to find that the FAC's were considerably younger than those of the 1960s; certainly their professionalism and performance over An Loc belied their rank and age.

At a higher level, the battle for An Loc once again proved that while massive air support cannot hold terrain it can be the decisive factor in assisting those who have that mission. The NVA grossly miscalculated the havoc that could be brought to bear on its forces by gunships, bombers and tactical air strikes; they also underestimated the Air Force's ability to adjust to a rapidly changing environment. Although Hanoi's divisions assembled a formidable array of air defense weapons, they failed to grasp the fact that air power is restricted but not negated by an active hostile environment. Coupled with judicious allocations decisions, the adaptability of the tactical airlift commanders, the FAC's, SAC's ADVON, and weapon systems such as the AC-130 prevented An Loc from being Giap's 1972 "Dien Bien Phu" victory.

ON 7 APRIL, President Thieu ordered that An Loc be held at all costs—and with considerable help it was. By decree, it assumed a symbolic importance far beyond its military worth. And although it did not fall, it did not remain intact. The ARVN lost nearly 5400 men in the defense of Loc Ninh and An Loc, 2300 of whom were killed or missing; no one will ever know the NVA casualties.²⁴ The battle was one of the few mid-intensity, conventional

situations of any duration to arise out of the Vietnam war. It was fought with massed forces, intense firepower, and large quantities of sophisticated equipment. At the end, the objective of the fighting, the former commercial hub of the rubber industry, was a Guernica-like mural of the devastation of modern warfare. By summer of 1972, its population

had shrunk to 250 civilians, and only a few buildings were left standing to dot the once picturesque landscape. No markers were emplaced to honor Vietnamese or Americans; the mute testimony to all that occurred in An Loc was the rubble, the graves, and the burned-out hulks of combat vehicles.

Fort Sheridan, Illinois

Notes

1. Don Oberdorfer, *Tell* (Garden City: Doubleday and Company, 1971), pp. 329-30.
2. A. H. S. Candlin, "The Spring Offensive in Vietnam," *The Army Quarterly and Defence Journal*, July 1972, pp. 411-12.
3. 5th Division Combat Assistance Team, *After Action Report. Binh Long Campaign 1972*, 19 October 1972 (date declassified), pp. 3-30. Hereafter cited as 5DCAT.
4. Harold Ellithorpe, "Can You Hold Out for Just Eight More Minutes?" *Life*, 21 April 1972, p. 51.
5. United States Military Assistance Command Vietnam (MACV), *Command History January 1972—March 1973* (U), TOP SECRET, Vol. II, unclassified paragraphs of p. J-7 (U), J-9 (U). Hereafter cited as MACV.
6. "Fierce War on the Ground," *Time*, 1 May 1972.
7. Colonel Walter F. Ulmer, Jr., "Notes on Enemy Armor at An Loc," *Armor*, January-February 1973, pp. 15-20.
8. MACV, p. J-13 (U).
9. Conversations between SFC Jesse Yerta and Major John D. Howard, May-June 1972, An Loc, RVN.
10. MACV, p. J-14 (U).
11. John Saar, "A Nervous Air Mission to An Loc and Back," *Life*, 12 May 1972, pp. 36-37.
12. Major John D. Howard, "Airborne Division Advisor Log—6th Airborne Battalion," May-September 1972, unpublished daily journal, vol. I.
13. MACV, p. J-19 (U).
14. 5DCAT, Appendix 12 (Troop Strength—An Loc 10 May 1972).
15. Ministry of Foreign Affairs, *The Heroic Battle of An Loc*, Saigon, 1972, pp. 25-26.
16. General Hollingsworth and/or General McGillfert usually talked to most of the advisers on a regular basis during their daily surveillance of the battle area.
17. Ulmer, p. 17.
18. Philip C. Clarke, "The Battle That Saved Saigon," *Reader's Digest*, March 1973, pp. 155-56.
19. Conversations between Lieutenant Colonel Arthur E. Taylor, Jr., and Major John D. Howard, May-June 1972, An Loc, RVN.
20. Clarke, p. 155.
21. Interview with Major Kenneth Ingram, former 5th DCAT Artillery Adviser, Fort Leavenworth, Kansas, 21 February 1974.
22. Howard, vol. I.
23. 5DCAT, Appendix 15.
24. *Ibid.*, Appendix 20.

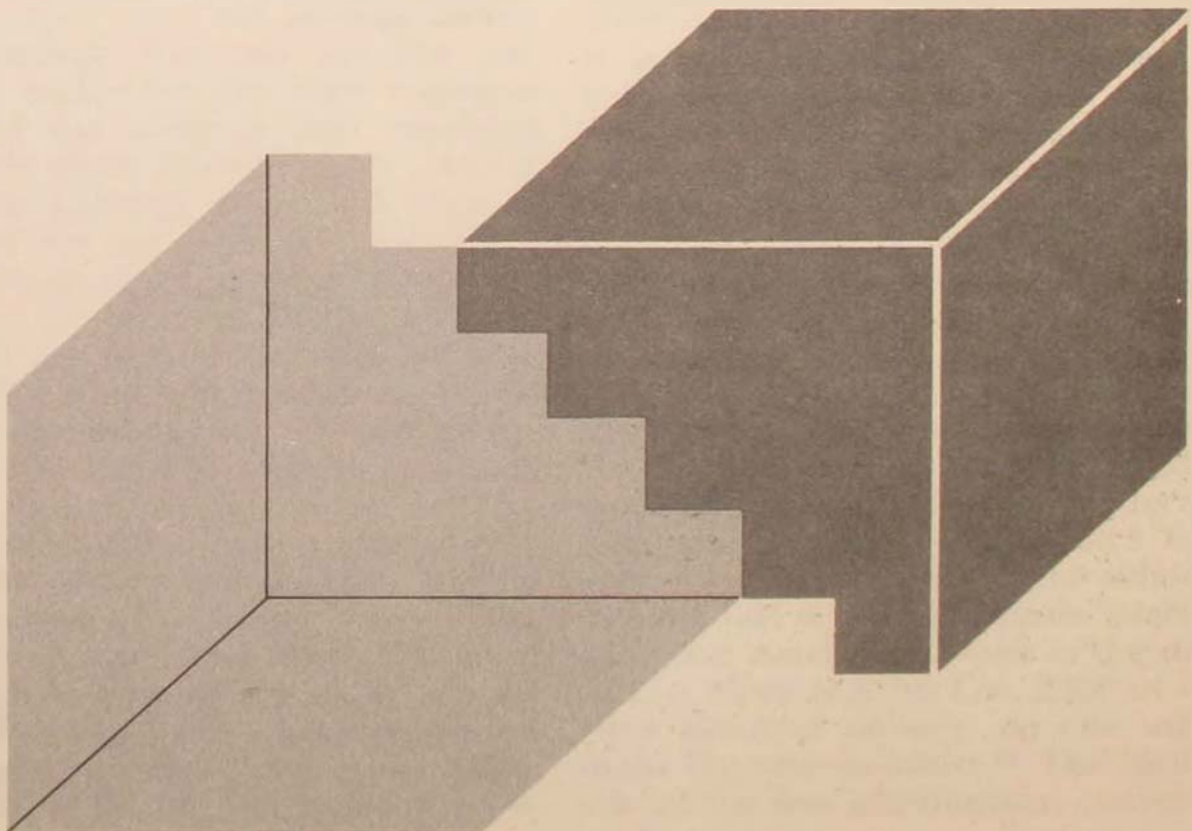
EACH of us makes countless decisions every day. Some decisions are readily made; however, many are very complex. Once other people are brought into decisional activity, the process becomes more structured, complicated, and time-consuming. Thus, the process of developing a supportable position in organizations is often a difficult task, and the difficulty appears to increase geometrically according to the number of individuals, organizational layers and size, varying interests of the participants, distance between individuals or organizations, and the lack of appreciation one has for the other's priorities. It is axiomatic that large, highly complex organizations find the decision process a challenge and devote top-management attention to the entire process.

The challenge of arriving at the optimum position in an organization as large as the United States Air Force, with its numerous commands, worldwide loca-

Air Force Review

THE AIR FORCE DECISION PROCESS

BRIGADIER GENERAL GERALD E. COOKE
COLONEL RAYMOND C. PRESTON, JR.



tions, and varying operational and support responsibilities, presents a difficult task. Yet, decisions are made daily at all levels in the Air Force, with some of the most critical and challenging made at Headquarters USAF. How is this accomplished? How is a coordinated position reached on controversial issues among so many key Air Staff and major command managers? Or is there in fact little or no discussion or coordination taking place on the difficult problems and instead a dictatorial judgment being imposed by a few senior individuals? No, deliberations and coordination do take place, and agreement results—and, yes, it is often difficult and sometimes impossible to obtain consensus through the formalized, hierarchical channels on complicated or controversial subjects.

Most of us are aware that large organizations have at least two ways to communicate: (1) a formal, straightforward functional channel and (2) an informal, diffuse communication system such as a luncheon meeting or other informal channels. We all know the formal decision channel—I go to my boss, he or she goes to his or her boss, and we coordinate laterally. The problem of obtaining the best position through the formal coordination cycle is a challenge many of us have faced.

This is not an Air Force problem alone. All organizations, and especially the larger ones, find the achievement of consensus and coordination particularly vexing. Private industry, as an example, has recognized the limitations of obtaining consensus solely through formal bureaucratic channels. Consider the problem of obtaining consensus in a large company among the vice presidents for marketing, for manufacturing, and for quality assurance. A stable production rate that would be efficient might not match seasonal sales demands. As for quality assurance, high

reliability in component parts would increase the quality of the product, but the added cost might make the price of the end item noncompetitive and production less efficient. Obtaining consensus among these three senior managers would be difficult, to say the least, since each has different and often conflicting responsibilities and goals. Major corporations in the free enterprise system years ago developed a way to produce consensus, especially when defining the broader corporate goals that transcend the narrower goals of the functional or operating officers. They produced an organizational overlay on the operating organization, one less structured and less formal. These groups are known by many names, such as Board of Directors, Executive Policy Committee, or Operating Officers' Policy Council. Membership usually includes the operating directors for marketing, manufacturing, and quality assurance, but when they sit as members of the board they must act as corporate executives and not in their narrower operational or functional role. We see that the functional manager now must wear a second hat and play a dual role when he sits on the "board."

This system in the world of private business and finance is not unlike the corresponding decision-producing system that has developed in the past 27 years in the Air Force Headquarters Staff. Several "corporate" Air Force groups were purposely established with the goal of addressing the more crucial and controversial issues and streamlining the decision process—in a way that could never be achieved by the bureaucratic organization. Subsequently, this corporate management organization within the Air Staff evolved into today's Air Force Board Structure.

The Board Structure provides a formalized way of rapidly assembling functional managers, placing them in a dual, corpo-

rate role, and directing their efforts toward the resolution of issues that rise above their functional responsibilities. These corporate groups have as their fundamental purpose:

—To provide recommendations for the consideration of the responsible functional decision-making authority. In this respect, the Air Staff corporate groups differ from the “Board of Directors” analogy in that the former are recommending bodies and not directing or decision-making bodies, as are the latter.

—To assure that the collective evaluation and specialized experience of senior Air Staff members are brought to bear on important matters.

—To expedite coordination on issues that are urgent, major, and complex and demanding of nonhierarchical treatment.

Not all Air Staff decisions require the unique Board Structure approach. When the responsible functional staff official can make and defend his or her own decisions, can carry out the necessary actions within his or her own organization, and can achieve functional Air Staff coordination, then deliberations by the corporate bodies are not required. Indeed, if one were to count the Air Staff issues addressed and the decisions made, he would find the great preponderance of decision-making taking place outside the Board Structure—by the formal, hierarchical organization. However, the key issues and major decisions do comprise the majority of Board Structure activity.

THE evolution of the Board Structure started when the United States Air Force was established in 1947. The first Board Structure element was the Board of Senior Officers, which emerged at that time from the Army Aircraft and Weapons Board. The purpose of the

Board was to assess resources and missions and to make recommendations to the Chief of Staff. The Budget Advisory Committee was also established about this same time. In 1951 General Hoyt S. Vandenberg, then Chief of Staff, formed the Air Force Council, which continues relatively unchanged today. It is the senior uniformed corporate management review body of the Air Force Board Structure.

As a result of the turbulence of the 1950s—i.e., the Korean War, the effect of Sputnik on missile and space programs, etc.—several more corporate groups had been formed by 1961. The objective was to better enable Hq USAF to address fast-moving changes in force structure and management techniques. At this time, the Board Structure consisted of the Air Force Council (AFC), Designated Systems Management Group (DSMG), four Air Staff Boards (ASB), the Program Review Committee (PRC), and numerous panels and working groups.

By 1963 the entire Air Staff had undergone considerable functional reorganization, as did the Air Force Board Structure. The four Air Staff Boards were replaced by one Air Staff Board, which now had “across the Air Force” perspective and oversight. At the same time, more than 74 corporate groups that had evolved within the Air Staff were dissolved. During this time period, the Force Structure Committee (FSC) was chartered and added to the Board Structure.

In 1970 the Operational Test and Evaluation Committee (OT&E) was established, partially as a result of Congressional and public criticism of how new weapon systems were performing when put into operation and partially in response to the specific OT&E criticism in the “Blue Ribbon” Defense Committee report. The Air Force Policy Council is the most recent senior corporate group. It was formed in

1973 at the request of the Secretary of the Air Force. As a result of a study conducted for the Vice Chief of Staff in late 1973, a Simulator Panel and a Research, Development, Test and Evaluation Panel (RDT&E) were added to the Air Force Board Structure. Finally, with the establishment of the Air Force Test and Evaluation Center (AFTEC) in January 1974, the Operational Test and Evaluation Committee was disestablished. As one can see, the Air Force Board Structure is not a static organization. It is responsive to the deliberative and decisional needs of the Air Force.

Air Force Board Structure Today

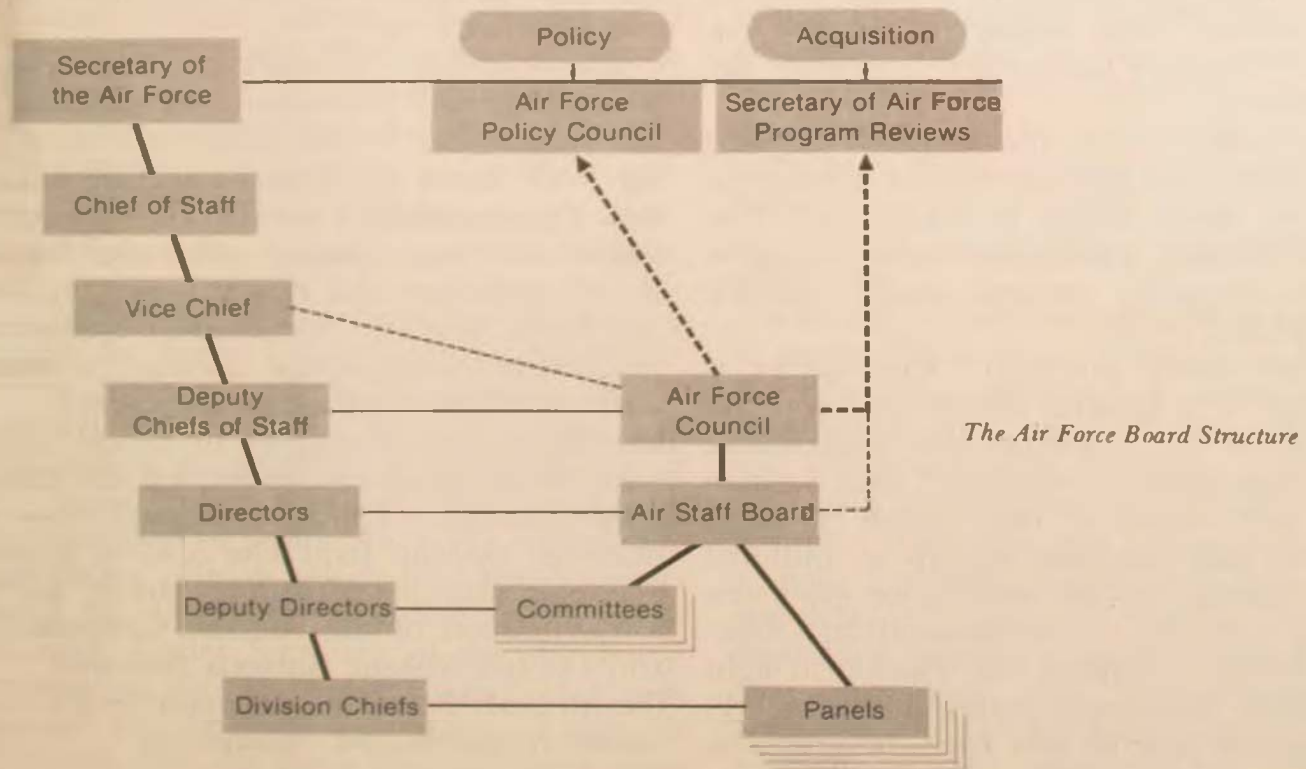
The Air Force Board Structure is assigned to the Office of the Vice Chief of Staff. The deliberating bodies of the Board Structure are shown graphically on the right in Figure 1 and are described

below. The functional levels in the Air Staff are shown on the left.

Air Staff Board

The Air Staff Board is chaired by the Director of Programs, and its membership consists of six director-level members and the Assistant Chief of Staff, Studies and Analysis (normally major generals). The Air Staff Board has two subelement levels: panels and committees.

—*Panels.* Approximately one-half of the items brought before the Board Structure enter at the panel level. There are twelve panels, each chaired by a division chief with the rank of colonel. The current panels are Aerospace Defense; Airlift; Command Control and Communications; Data Automation; Electronic Warfare Penetration; Reconnaissance/Intelligence; Research, Development, Test & Evaluation; Simulator; Space; Strategic; Support; and



Tactical. Each panel has nine to fourteen members from the major Air Staff functional areas. Panels perform fundamental and essential service as they review a subject by focusing attention on such questions as:

—Are the data validated and based on current policy, planning, and program guidance?

—Is a major command affected? More than one?

—Have all alternatives and trade-offs been considered?

—Can the sponsor of the subject best work his problem functionally, or is it better to work the problem within the Board Structure?

—Should the briefing go forward to a higher decision level, and, if so, are refinements in the presentation necessary?

—Should the panel make its recommendation to the functional staff authority or to a higher Board Structure element?

Examples of recent presentations to the panels include Air Defense Peacetime TAC Augmentation, Impact of Budget Control Act, AWACS Force Requirements, and Air Force Weapons Laboratory Computer Requirements.

—*Committees.* At the Deputy Director level, there are two committees oriented to specific areas: Force Structure and Program Review. Committee membership is at the brigadier general, senior colonel, and PL313 levels.

The Force Structure Committee is chaired by a general officer who is nominated by the DCS/Plans and Operations. The committee is concerned with evaluating the ability of our forces to meet known and potential threats as outlined and defined in the intelligence estimates. They annually (1) recommend an Objective Force to achieve our mission in light of those forecasted potential threats; (2) categorize systems and force programs to

identify those that must be defended at costs; (3) evaluate program proposals determine their impact on our force structure, present as well as future; and (4) recommend when and what new weapon systems should enter the force.

The Program Review Committee is chaired by a general officer who is nominated by the DCS/Programs and Resources. This committee is primarily concerned with achieving program balance for both the next fiscal year and the following years. The functions of this committee are to (1) develop the annual Program Objective Memorandum (POM) and critical review Air Force budget submissions; (2) examine programs in relation to budget estimates and resource requirements to insure that we are optimizing our capabilities; (3) look at program change "candidates" to determine their effect on weapon and support systems, including facility construction and equipment modification requirements; and (4) review the force and financial plan to determine whether program adjustments have an effect in that area.

The chairmen of each of the twelve panels and two committees just described are responsible to the Chairman of the Air Staff Board for Board Structure matters. These chairmen work in close coordination with one another. The Air Staff Board addresses the entire spectrum of Air Force activity. The Board's interests range from concepts and doctrine to how we support the operational equipment on the flight line. Examples of recent Air Staff Board presentations include the DOD Space Shuttle, C-5 Wing Structural Modifications, FAA/ADC Joint Use System, Joint Strategic Bomber Support Study, and Modernization of the Alaskan Command and Control System. Subjects reviewed by the Air Staff Board are normally reviewed earlier by panels and committees.

Air Force Council

The Air Force Council is the primary advisory body to the Chief of Staff. It is chaired by the Vice Chief of Staff, with membership consisting of the Deputy Chiefs of Staff (DCS) for Programs and Resources, Personnel, Systems and Logistics, Plans and Operations, and Research and Development; the Assistant Vice Chief of Staff; the Comptroller of the Air Force; and The Inspector General. One might say that the Air Force Council is the "blue suit" Board of Directors of the Air Staff. The Air Force Council, like the Air Staff Board, is concerned with the entire gamut of Air Force business. However, not all Air Force Council subjects are reviewed by the Air Staff Board or its subelements. Approximately half of the Council subjects have had prior review at a lower element. Examples of recent presentations to the Air Force Council include Program Decision Memorandum (PDM) Strategic and Tactical Issues, Review of Colonel Requirements, Management of Rated Officers, AWACS Operational Concept, F-5E Flight Characteristics, Future of Air Force in Space, CONUS Airlift Consolidation, and the FY 76 Budget Submission.

Air Force Policy Council

The newest Board Structure element is the Air Force Policy Council, chaired by the Secretary of the Air Force. All the services have Policy Councils, which can function in support of the DOD Armed Forces Policy Council. Membership is comprised of senior Air Force civilian and military officials selected by the Secretary of the Air Force, including the Chief of Staff, Under Secretary of the Air Force, most of the Air Force Council members, and the Assistant Secretaries of the Air Force. The Air Force Policy Council assists

the Secretary in the development and resolution of major policy matters of high-level interest. Subjects are placed on the agenda at the request or approval of the Secretary of the Air Force.

Secretary of the Air Force Program Reviews

The SPR's are chaired by the Secretary of the Air Force. Attendance is designated by the Secretary and is similar to that for attending the Air Force Policy Council. The Secretary of the Air Force on a regular basis reviews major weapon systems which are in their development and acquisition cycle. Most major programs are reviewed on a monthly basis, with a few select programs reviewed only quarterly or semiannually. These reviews serve two primary purposes: (1) to keep senior Air Force personnel informed of the current status of major development and acquisition programs of high national importance and interest; and (2) to afford the System Program Director (SPD) the opportunity personally to inform senior Air Force officials of any significant problems encountered and to present his personal assessment of the program, along with the high-level action or approval that he needs to manage his program efficiently and effectively.

The SPR system has often been referred to as the "Blue Line" channel. It affords the SPD direct, face-to-face access to the most senior Air Force officials, where he can obtain top-line decisions without a long and cumbersome coordination and approval cycle. The SPR has proved to be a vitally necessary management tool, since any delay in obtaining a decision on major acquisition programs could create significant contractual, cost, and schedule impacts. Prior to the Secretary's review, these specially selected programs are reviewed

by the Commander, Air Force Systems Command, and by the Air Force Council with the Air Staff Board in attendance.

Programs are added to and deleted from the SPR agenda, depending on their problems or progress and according to the phase they are in within the acquisition cycle. The current systems being reviewed are the B-1, F-15, Defense Support Program (DSP), Airborne Warning and Control System (AWACS), Minuteman III, Advanced Airborne Command Post (AABNCP), Air Force Satellite Communications System (AFSATCOM), A-10, F-5E, Defense Satellite Communications System II (DSCS II), Maverick, Pave Strike, and Tactical Drone/Remotely Piloted Vehicle (RPV). The last three listed programs were recent additions. Systems are dropped from review at the appropriate time when continuing and frequent close scrutiny by the Secretary and the Chief of Staff are no longer required. For example, the C-5, F-111, and SRAM programs were recently deleted as SPR subjects.

THE Directorate of the Air Force Board Structure provides executive support for each element of the Structure. The organization may be compared to the office of the executive secretary in a major corporation. Officers in the rank of colonel serve as executive secretaries to the Air Staff Board, Air Force Council, Secretary's Program Reviews, and the Air Force Policy Council. Majors and lieutenant colonels serve as executive secretaries of the panels and committees. Executive secretaries frequently have responsibility for more than one corporate group. For the most part, their duties take the following form:

—Advise and assist their respective chairmen.

—Advise and assist functional staff action officers.

—Prepare reports on deliberations, include action items, decision letters and memoranda.

—Monitor follow-up actions to assure that a corporate recommendation has been considered within the functional organization.

—Provide conference and meeting facilities.

—Control attendance.

—Provide organizational continuity when a corporate group is not in session.

Perhaps the most challenging job for an executive secretary is in the preparation of documents and decision papers that become the formal record of the deliberations and the resulting corporate recommendation.

It must be re-emphasized that the Board Structure elements do not make decisions but provide recommendations to functional staff managers—up to and including the Deputy Chief of Staff—or alternatively elevate the problem or issue to the next higher Board Structure element. At the Air Force Council, recommendations are provided to the appropriate functional staff manager for action or to the Chief of Staff for those issues which require his decision. Upon receiving Chief of Staff approval of a Council recommendation, a Chief of Staff Decision or Guidance Memorandum is prepared and released. Actions directed by the Secretary of the Air Force are implemented by a SAF Directive. Because they are recommending bodies and not decisional, all Board Structure recommendations are nonattributive when the functional authority actually renders and staffs his decision.

operating procedures for each element

There are restrictions on who can sponsor

in agenda item or issue before an element of the Board Structure. Without rather strict ground rules, the effectiveness of each element could be greatly diluted by those who would unnecessarily avoid the normal decision channels, by those who would air less-significant issues, or by those who would elevate an issue to a much higher element than is required. As a general rule, the right to sponsor a subject is restricted to that person who is a member of the Board Structure element being asked to review the subject. In other words, a division chief (colonel) can sponsor a subject to a panel, while a Deputy Chief of Staff (lieutenant general) sponsors subjects to the Air Force Council. In each case, the concurrence of the chairman is necessary. Furthermore, a chairman can also sponsor a subject or issue to the next higher element within the Board Structure.

At what level should a subject enter the Board Structure? The Board Structure provides a functional staff officer the means of increasing corporate visibility and obtaining wider support from functional managers for problems or issues that are stymied in the hierarchical organization, since a Board Structure element can escalate a subject under review to a higher corporate level. This prerogative is sometimes viewed as an "end run" mechanism in the staff, especially if it happens when an action officer is encountering resistance in the formal coordination system but achieves his objective on the Board Structure "ladder." However, the sponsor who attempts to use this technique still must convince the corporate group of the correctness of his position. The "end run" mechanism is also a two-edged sword: the sponsor may get an answer he does not want from a corporate element, or he may lose control of his subject to a chairman who can take over the sponsor-

ship and move the issue to a higher Board Structure element.

If time allows, it is normally more desirable to enter a subject or issue into the Board Structure at the panel level, because at this level one gets more detailed expertise, and organizational consensus builds from the bottom. Once a subject has been sponsored to the Board Structure, it is up to the corporate group to take one of three courses: (1) recommend the subject to a higher element of the Board Structure; (2) recommend a decision; or (3) place the issue back into the hierarchical Air Staff decision-making organization. If the sponsor disagrees with the latter recommendation, he may elect to convince a higher-level sponsor that his viewpoint should be overriding and that the issue should be reviewed at a higher level within the Board Structure—opposing the advice and recommendation of the lower Board Structure element. Minority reports can also be filed by Board Structure members. There are occasions when an issue is so critical and time-sensitive that review by each element up the Board Structure "ladder" is neither possible nor desirable. When this occurs, the subject can go straight to either the Air Staff Board or the Air Force Council.

Each year the Board Structure elements hold about 500 meetings and review about 800 subjects. There were 504 meetings held in 1972, 486 in 1973, and 540 meetings in 1974. One of the most active elements in 1974 has been the Air Force Council, which reviewed nearly twice as many subjects as in most previous years.

Briefings are normally restricted to 30 minutes. Discussion typically will run an additional 30 minutes. The 30-minute time restriction requires the briefer to organize his subject so that only the most important and crucial aspects to a decision recommendation are addressed. The most

professional presentation techniques are required to be successful in the Board Structure.

There are strict rules regarding the number of additional people a briefer or sponsor is allowed to bring to a Board Structure element meeting. This is especially true of the senior elements such as the Air Force Council. Only guest experts who are expected to contribute actively to the presentation are invited into the meeting. Backup personnel are on call outside the briefing room. It is crucial to Board Structure effectiveness that the candidness and give-and-take, which are characteristic of the deliberations of any senior corporate management and decision organization, be strongly protected. Therefore, every effort must be made to assure confidentiality in and after these meetings. Only by protecting deliberations can the inherent effectiveness of the Board Structure process be realized.

advantages of the decision process

The Board Structure system offers the Air Force several advantages not available in a straightforward functional organization. A few of the more important advantages are that it

- prevents problems from being stymied in the hierarchical coordination process.

- requires the membership to act as part of the corporate body seeking an overall Air Force position. Minimizes parochialism on the part of the functional manager by ensuring that the views of the other functional managers, who are also members, are brought to bear on the problem.

- forces a decision by the weight of a corporate recommendation. Many issues could be impossible to solve through formal coordination because of an inherent

dilemma between legitimate conflicting functional interests. Examples would be a new Officer Effectiveness Report (OER), Colonel Rated Positions, Headquarters Staff Reductions, and O&M Funding Priorities among Major Commands.

- helps top management to bring potential problems to the surface and act while reasonable options still exist.

- screens and filters topics so that each issue is addressed at the appropriate level of management, thus conserving the time and energies of management at each level and allowing them to concentrate on the issues appropriate to their respective levels of responsibility.

- employs streamlined administrative procedures that promote increased effectiveness in obtaining Air Staff consensus. Consensus and agreement come easier when face-to-face, adversary-advocacy discussion takes place at the moment of a lucid briefing—as opposed to circulating staff summary sheets and thick folders. The Board Structure process is especially effective in forming judgments on complex subjects.

- enjoys great reliance and confidence on the part of the Air Force Chief of Staff. When a decision recommendation has come up through the Board Structure to the Chief, he can be assured that a thorough review has been accomplished.

THE corporate decision process at Headquarters U.S. Air Force, which is embodied in the Air Force Board Structure, is unique among the military services. Each element of the Air Force Board Structure continues to streamline the Air Force decisional process. The system is available, responsive, and supportive to the decisional needs of today's Air Force. Furthermore, this management concept has withstood the test of time.

THE
RAVEN'S
NEW
SEWT

Tomorrow's Electronic Warfare Officer Today

CAPTAIN DAVID B. WITHERS

CAPTAIN STEPHEN A. LEISHMAN



ONE OF the most important precepts of our national policy is survivability. Our ability to survive is based on the concept of preparedness. Preparedness means more than surmounting new and unexpected challenges by developing creative responses. The idea of preparedness also implies forethought and flexibility; if they are absent, a nation cannot be considered prepared to exist in today's dynamic world. Preparedness, simply stated, is to learn from the past and plan for the future.

With these thoughts in mind, the 453d Flying Training Squadron, part of the 323d Flying Training Wing, at Mather Air Force Base, California, has implemented an imaginative training program designed to prepare rated navigators as electronic warfare officers (EWO) for the challenges of today and the future. The main purpose of this program is to produce versatile, well-rounded Air Force officers specially trained to perform as combat aircrew members. The program is rooted in the lessons learned in Southeast Asia and the recent Middle East Yom Kippur conflict, as well as advances made in technology, management, and education.

Today's EWO is prepared to meet the unexpected and survive. The importance of the program is demonstrated by the current emphasis on electronic warfare, which exists even at the highest levels of government, and by the substantial amount of money presently being spent on EW research and development, equipment, and training. Before describing the new program, let's take a look at the old program for comparison.

the "traditional" training program

EWO trainees for the past several years have been exposed to a variety of topics and training activities designed to prepare

them for an active role in conventional and nuclear warfare. The course of instruction was broken into three major phases: fundamentals of electronics, electronic warfare support measures (ESM) and electronic countermeasures (ECM).

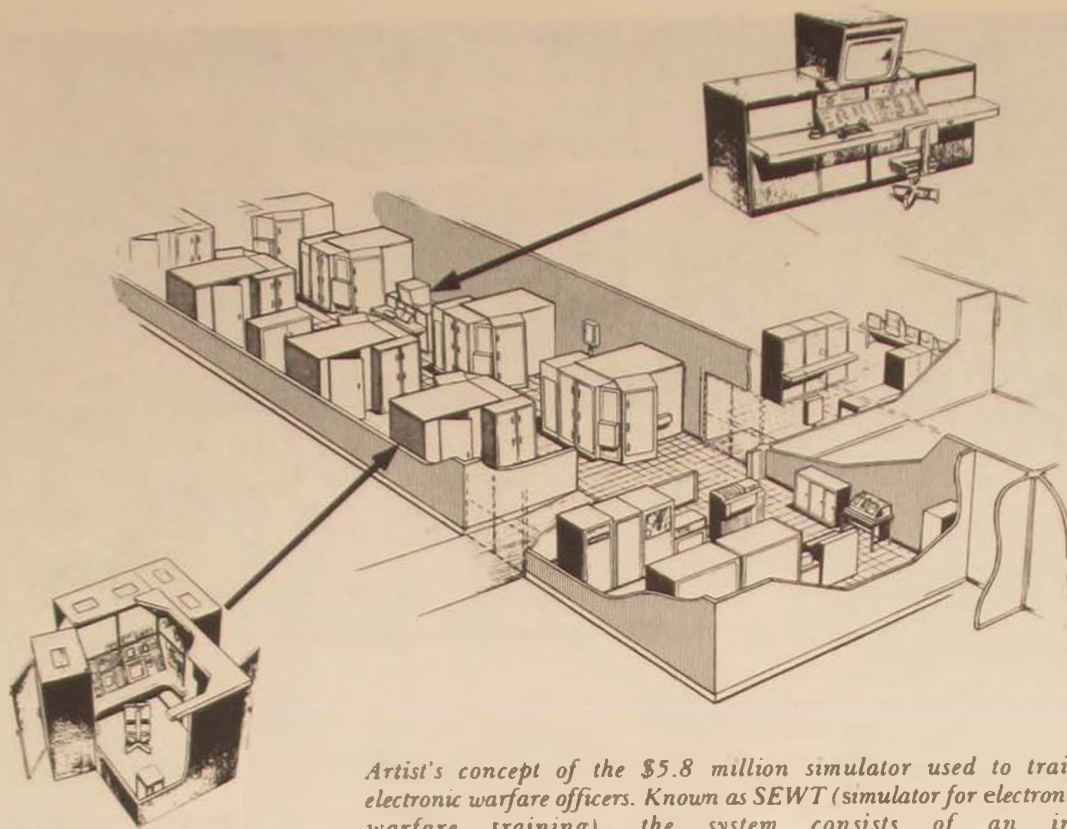
In electronic fundamentals, the student obtained the necessary background, vocabulary, and knowledge of equipment operation necessary for the successful completion of the two later phases.

In ESM, the students participated in an integrated academic, flying, and simulator program that taught radar operating parameters, crew coordination procedures, and other skills required in the performance of airborne electronic reconnaissance. ESM simulator training took place in the ALQ-T3 RB-47H electronic reconnaissance simulator.

In the third phase, the students changed this emphasis and began their education in the arts of ECM. During this phase, student participation in academics, flying, and simulators prepared them to counter electronic threats successfully. ECM simulator training was conducted in the ALQ-T4 B-52H ECM simulator. Both the T3 and T4 simulators used in the program are over ten years old.

ESM and ECM flying training were conducted in the venerable ET-29D aircraft. The entire training program required approximately seven months to complete and included 463 hours of academics, 13 flights, and 20 simulator missions.

The T3 and T4 simulators established ATC's experience in using simulators to support EW training. These simulators adequately fulfilled their original intent—to simulate and support EW training for a particular airframe number. They also demonstrated, by a lack of many necessary training features, just how important these features are in meeting future simulator requirements. Any new electronic



Artist's concept of the \$5.8 million simulator used to train electronic warfare officers. Known as SEWT (simulator for electronic warfare training), the system consists of an instructor console (detail in upper right-hand corner), eight student stations (detail in lower left corner), and a SEL-86 digital computer with associated equipment (foreground).

warfare simulator must incorporate desired training features and capabilities that overcome T3 and T4 simulator inadequacies.

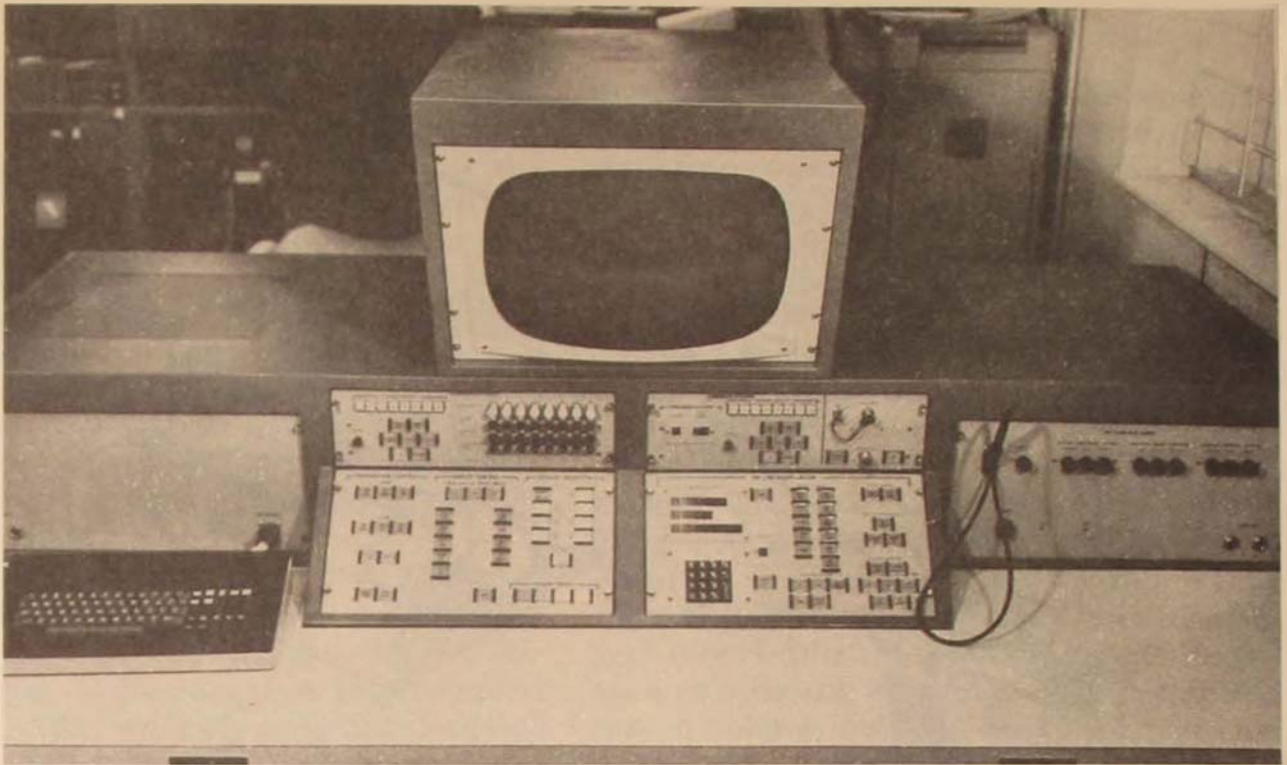
The flying training portion of the old syllabus used twenty-year-old ET-29 aircraft. These airplanes were extremely weather-sensitive and subject to a variety of maintenance problems. Depending on the route flown and the time of day, the students were presented with a nonstandard radar environment.

a new simulator training concept

The new \$5.8 million AN/ALQ-T5 simulator for electronic warfare training (SEWT, pronounced "suit") provides the means for applying a new simulator training concept. This training concept can be

simply stated as follows: to train rated navigators in the basic electronic warfare knowledge and skills, not limited to one or two weapon systems but to a wide application in many weapon systems and electronic warfare tactical environments. This concept is being accomplished by generalizing the content of simulator missions and by placing the students in a dynamic signal/countermeasures equipment environment capable of responding in depth to student progress toward desired operator skill levels.

The T5 is configured as a self-paced teaching machine that will provide students with objective evaluations and immediate feedback. It will also reduce the instructor-to-student ratio, thereby reducing manpower requirements. The SEWT has a designed life expectancy of ten years



Photographic details of the instructor console (above) and the student station (opposite) suggest the intricacy of the electronic means of operating today's national defense weapon systems.

and will result in an annual cost savings of \$1.7 million.

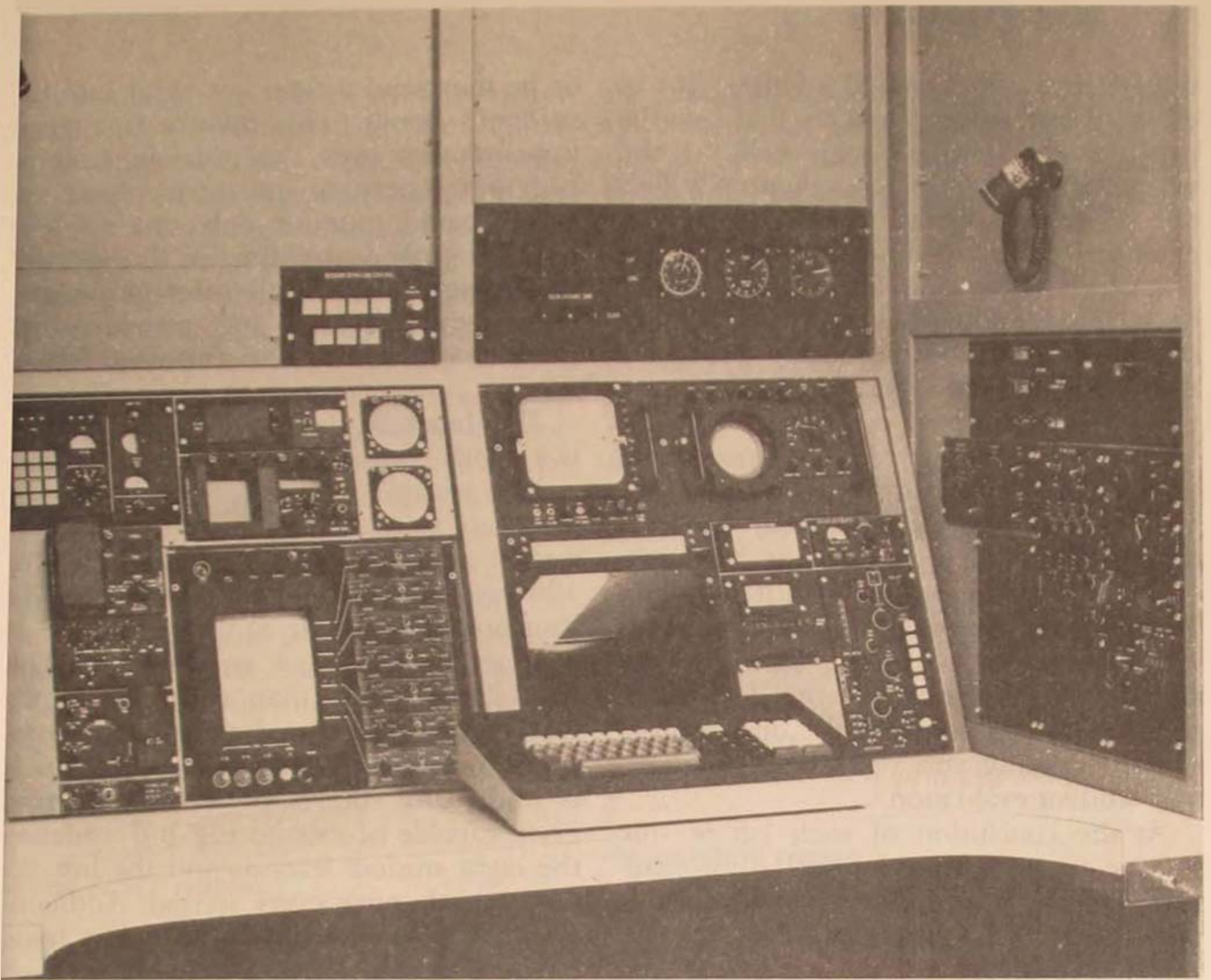
DEVELOPMENT of the SEWT began in June 1967 when Air Training Command (ATC) submitted a Required Operational Capability (ROC) to Headquarters USAF. In May 1970, Aeronautical Systems Division of Air Force Systems Command awarded the SEWT contract to the AAI Corporation, located near Baltimore, Maryland.

In developing the SEWT, the contractor pushed the state of the art in both hardware and software design. Three years later in-plant tests were completed and delivery was made to the 453d Flying Training Squadron. Air Force in-place acceptance tests were completed in October 1973, and the first SEWT-supported

class entered training in mid-January 1974.

The arrival of the SEWT provides the capability for eight students to "fly" independently eight separate and different "missions" simultaneously. Each of the eight student stations is an enclosed booth complete with EW equipment, warning receivers, a navigational panel, and communications equipment needed to complete each type of mission. Students will now be able to learn in one trainer the four different types of electronic warfare missions: electronic warfare support measures, electronic countermeasures, strike support, and Wild Weasel* missions. This capability far exceeds that of the simulators previously employed in the training program.

*The name designating electronically equipped USAF fighters that effectively counter surface-to-air missiles by locating and killing the SAM sites.



Available in each station is a student data terminal (SDT), which includes a keyboard, a cathode-ray tube (CRT) for alphanumeric displays, and a mission status panel. The SDT allows the students to interact with the computer for computer-assisted instruction during equipment, procedure, and tactics laboratory sessions. The SDT also provides for student-trainer interaction, through evaluation of student responses and reactions, and for reinstruction of desired tasks if the evaluations are failed.

The SEWT contains two evaluation systems: automatic and scripted. The auto-

matic evaluation system was designed to be used primarily during electronic reconnaissance labs or missions. When an error is detected, the system automatically displays an error message providing immediate feedback to the student, thus preventing him from learning an incorrect behavior pattern.

The second type of evaluation system is scripted by a programmer into a lab or mission. Four types of scripted evaluations are available, and they are used (1) to check actions required in a desired sequence—such as a checklist; (2) to make instantaneous evaluations of actions re-

quired in a short period of time; (3) to evaluate any student actions that may be prohibited—such as crew calls at the wrong time; and (4) to evaluate a collection of desired actions that occur over an extended period of time—such as completion of a number of assigned tasks. Failure of scripted evaluations will also provide the student with immediate feedback through error messages designed to promote desired learning outcomes.

The use of these evaluation systems will greatly reduce the instructor-to-student ratio. The new SEWT syllabus calls for a 1:4 instructor-to-student ratio, plus a console operator for training labs and missions. Trainer check missions will require only a 1:8 instructor-to-student ratio. As an added feature, the use of the T5 evaluation systems will increase the objectivity in student grading and produce a standardized student evaluation.

At the conclusion of each lab or mission, a postmission print-out is automatically available for students and instructors to review. Each print-out shows a computer overall grade and a list of the grades earned by the student from each of seven grading categories as defined in lab or mission development. A detailed print-out of failed evaluations is also available. From these postmission print-outs instructors are able to critique a student's performance, identify his weak areas, and recommend corrective action if necessary.

The monitoring functions for the eight student stations are handled by one instructor/console operator. The console contains a cathode-ray tube whose alphanumeric and graphic displays allow the console operator to assess the progress and problems of each mission and student. Once a console operator identifies a student with a problem, he may offer instruction from the console while he monitors the student's actions on the CRT,

or he may send a ratio instructor into the student's booth. This feature is a great improvement over the previous training program, where an instructor/console operator could monitor only one student. Other console controls enable the operator to monitor any or all interphone and radio communications and introduce real-time changes into the training lab or mission.

The heart of this one-of-a-kind trainer is a digital computer-controlled signal generation system. This signal generation system can simulate all known radio frequency signals. Up to 63 emitter signals or 126 radio frequency (RF) sources may be simulated on the air at any one time to produce a realistic EW environment. This capability is more than twice the signal-generating capacity of the analog computer-controlled T3 and T4 simulators. It is under the control of a real-time program capable of monitoring and updating the eight student stations and the instructor's console once every second. Additionally, SEWT signals will automatically come on and go down as the student's aircraft flies into and out of range of each emitter. Signal power levels will also vary with the range and altitude of the aircraft to the emitter site. Digital operation was selected over analog operation because of its greater capacity to handle more complex problems with greater accuracy at faster speeds in less physical area.

SEWT missions may be programmed to operate in any part of the world. Each mission can operate in a large gaming area: 2000 nm × 2000 nm × 100,000 feet. Within this area, the students may fly at any speed up to 2000 knots. Three different types of present-day aircraft flight characteristics have been programmed to be used for the students' aircraft, and others may be scripted as desired. Multiple aircraft simulation for each mission is

also available; as many as five other aircraft may be simulated at one time to fly as either friendly or hostile aircraft. These aircraft may have the same or five different aircraft flight characteristics. The availability of these different flight characteristics greatly enhances the flexibility and realistic presentation of the training program.

An additional feature of the SEWT is its short "turnaround" time between labs or missions. The complete changeover can be accomplished by the console operator and a few maintenance personnel in less than 15 minutes. This desirable feature leads to more efficient use of the T5 trainer. It also eliminates the previous scheduling problems that were caused by the amount of time required for maintenance personnel to complete signal generation and mission changeover in the T3 and T4 simulators.

the new SEWT syllabus

Based on the Instructional System Development (ISD) approach, a new no-fly SEWT syllabus has been developed for use with the T5. This syllabus shortens the course from 132 training days (28 calendar weeks) to 115 training days (25 calendar weeks) as the student progresses through a total of 46 labs and missions in the T4 and T5 trainers. Eleven labs and 22 T5 missions along with five labs and eight T4 missions make up the 135 hours the students spend in the simulators. Each lab or mission is designed to present the student with progressively increased difficulty. Most labs and missions are sched-

uled for a three-hour period, which allows for a two-hour programmed lab or mission to be completed and provides additional time for any necessary reinstruction.

miscellaneous considerations

The fact that the electronic warfare officer training program is going "no fly" should have little or no effect on the individual student's "fly-ability" when he arrives at his operational assignment. Each student in the school is a rated navigator when he arrives for electronic warfare training, and he therefore has already demonstrated his ability to adapt to the stresses of flight.

Under the SEWT syllabus, electronic warfare students will fly five proficiency flights as navigators, thus maintaining those aspects of navigational skills required for their new primary AFSC.

the process of change

The SEWT trainer represents a new concept in EW training and training equipment. With its high degree of flexibility, the trainer can be programmed to simulate new radar signals as soon as they are discovered and can be programmed to go almost anywhere and do almost anything within the realm of electronic warfare. This flexibility is the very heart of preparedness. Because of SEWT, today's electronic warfare officer is ready for tomorrow and is more highly qualified and versatile than ever before. Because of this, our nation stands that much further ahead in its goal of survivability.

453d Flying Training Squadron

LOGISTICS, PROCUREMENT, AND MANPOWER?

CAPTAIN RICHARD E. DUCHARME



ONE of the more important goals of logistics is the integration of the functional areas such as maintenance, supply, and procurement. Integration is the process of uncovering the relationships between functions, studying them, and developing procedures that allow the functions to work in unison toward a common mission. This article deals with the relationship between procurement and manpower.

The need for a relationship between the procurement of a weapon system of a particular design and the manpower to operate and maintain that system is rather obvious. However, the relationship between base-level procurement and manpower is less obvious. A base-level procurement function and the function of a major air command (MAJCOM) management engineering team on operating location at the same base are seemingly unrelated. An outline of the specific responsibilities of each function does not show how the two are related. However, the presentation of three hypothetical case studies will show that there is an important relationship between the two functions.

The cases demonstrate that a purchasing officer could unknowingly enter into an uneconomical supply, service, or construction contract. It is my opinion that the procurement officer simply does not always have the information he needs to determine whether a contract is economical and that the management engineering team on his base could provide the information he requires. On the other hand, the manpower officer may not have all the information he needs to do his job efficiently; often the purchasing officer can provide that information. The purpose of this article is to show that there is a need for a formal definition of the relationship between these functions. A proper analysis of the three cases presented, which demonstrate my viewpoint, requires an understanding of the functions.

The Functions Involved

The two functions are the base-level procurement office and the MAJCOM management engineering team. The following descriptions of them are not all-inclusive;

rather they outline those responsibilities pertinent to the cases presented.

base-level procurement

Base-level procurement, officially the local purchase program, has three objectives: (1) to give bases self-sufficiency, the commander the capability to use local instead of central procurement, and the procurement personnel an effective way to build good will; (2) to assure the use of the most advantageous procurement method; (3) to assure that personnel are continuously trained to improve program effectiveness.¹

The local purchase program is the responsibility of the installation commander. He determines the organizational level of the procurement function, programs for items of supplies or services authorized for local purchase, and authorizes initiation of purchase requests.

The base procurement officer is the subordinate of the installation commander; however, he is responsible for all local purchase actions as an agent of the U.S. government rather than the Air Force.

There are few directives that apply solely to guide the base-level procurement officer in the conduct of his affairs. Public laws, armed services procurement regulations, and Air Force procurement instructions provide the guidelines for all procurement. The base procurement officer uses those parts of the overall directives that apply to his activities.

the Management Engineering Program

Early in 1958 the Air Force recognized that it needed a new system for the allocation of the manpower resource. In 1960 Headquarters USAF directed that the USAF Management Engineering Program

be implemented for the primary purpose of developing and maintaining valid work center manpower standards.² In 1962 President Kennedy directed that action be taken to increase the productivity of all federal employees through methods improvement, more efficient layouts, and time-saving equipment.³

To support these two directives, the Air Force implemented project *ECONOMAN*, which means "effective control of manpower." *ECONOMAN* centralized manpower controls at the major air commands. However, *MAJCOM*'s established management engineering teams (*MET*'s) at base level in order to develop manning standards at the working level.

Basically, establishment of a manning standard requires (1) listing the specific tasks that a work center is required to perform; (2) recording conditions, facilities, and equipment; (3) measuring the man-hours expended, using approved industrial engineering techniques; and (4) establishing the relationship between man-hours and workload so that manning can be adjusted for varying workload needs.⁴

In 1965 the *MET*'s were also given the responsibility of the traditional manpower functions, formerly assigned to the base-level personnel function. These responsibilities included (1) maintaining manning authorization documents, (2) reviewing civilian positions for essentiality, and (3) performing triennial reviews of certain base functions. These triennial reviews constitute a complete cost estimate of a function, including the cost of men, equipment, and facilities and an apportionment of the cost of support received from all other base functions.⁵ These reviews are compared with cost estimates obtained by the procurement officer from private contractors, to determine the effectiveness of in-service accomplishment of a specific function or work center.

Case I. A Supply Contract

the case

MSGT Jones, *NCOIC* of the Maintenance Analysis Section of a small Consolidated Aircraft Maintenance Squadron (*CAMS*) was an outstanding *NCO*. He and his able assistant, *SSGT* Smith, took pride in the Maintenance Data Analysis Report that they prepared monthly. The section was authorized only two manpower spaces, but the workload was not great and there was no backlog of work. *SGT* Jones had an extensive background in statistics and knew he could perform more sophisticated data analyses if he were not limited by the capacity of the nine-digit desk calculator authorized by his Table of Allowance (*TA*). Then he became aware of the existence of the Super 3000, a desk calculator that could almost be classed as a mini-computer because of its speed, capacity, and small memory bank. In view of its cost, about \$3000, his justification to the *CAMS* commander and the base equipment management office (*BEMO*) had to be strong. It was. Not only would the Super 3000 allow a more detailed data analysis but *SGT* Jones showed that it could save eight man-hours per week over the calculator then in use. At \$4.00 per man-hour the Super would pay for itself in less than 20 months.

The base procurement officer, upon receipt of a properly justified purchase request and after efficient negotiation, contracted for the Super 3000, and *SGT* Jones got his calculator.

A management engineering study of the *CAMS* had been performed earlier in the year. A work center description (*wcd*), listing the specific tasks required to be performed by the maintenance analysis section, was written, and the special equipment (the 9-digit calculator) was also recorded. (The *wcd* is similar to the "stand-

ard practice" used in private industry.⁶) Then, using accepted industrial engineering techniques, the MET established that the average workload of the maintenance analysis work center was 242 man-hours per month; one man's expected work capability is 142 hours per month.⁷ Therefore, the work center needed 1.7 men to do the job ($242 \div 142$). A fractional manning guide used by the MET directed that this function be authorized two manpower spaces.

the analysis

The procurement officer unknowingly entered into an uneconomical contract. The time saved, cited as part of the justification of the purchase request, had no meaning because there were 284 man-hours available to the work center per month (2 men \times 142 hours) and a workload of only 242 hours. This means there were 42 hours of slack before the purchase; if SGT Jones's figures are correct, the new calculator will introduce 32 additional slack hours.

The mission had not changed, now new reports were required, and the specific tasks required by the work center were the same; therefore, the old calculator could have accomplished the mission. If we save man-hours and there are no other productive tasks to be performed during the "saved hours," we have saved nothing—unless we reduce manpower authorizations!

The more sophisticated techniques that were possible on the Super 3000 were "nice to have" but not required. For the past several years great emphasis has been placed on "buying only what we need" in high-level defense procurement. Whether a particular expense is in the national interest is the question that must be asked. This policy should also extend down to the base level.

If the required man-hours per month had been only 172, the workload would have been too great for one man and two spaces would still have been authorized. In this situation, the purchase of the Super 3000 would have been an economical contract, for by reducing the required man-hours to 140, within the capacity of one man, it would save the cost of one manpower space or about \$9400. However, the manpower officer, having no way of knowing that the new equipment was purchased, would not have reduced the authorization. The real loss under the present system would have been the cost of the new calculator plus the cost of an unneeded manpower authorization.

Case II. The Service Contract

the case

In 1971 Captain Coke, the base procurement officer, received a purchase request (PR) from the civil engineering squadron. It requested that a six-month service contract be let for the collection of trash in the base housing area. The justification cited on the PR was: "Insufficient manning to be accomplished in-service."

Captain Coke knew that for the past three years local firms had collected trash in the housing area, and this PR was just a renewal request. He awarded a contract to the lowest responsible bidder after formally advertising the contract.

One month later, the captain was shocked by the contents of a procurement memo. It cited the Congressional displeasure of certain uneconomical service contracts that were let based on "insufficient manning authorizations" when in fact a check of manning projections showed additional authorizations were forthcoming within a short period.

Five months later, the same PR showed

up for renewal. Captain Coke immediately got a signed statement from the manpower officer certifying that no additional manning was projected for the civil engineering squadron. Then he awarded the contract.

the analysis

The question, "Did an uneconomical contract result?" does not hinge on whether there were sufficient in-service manpower authorizations to do the job. The question is, "Would it have been more economical for us to perform the task with in-service personnel?" The manning authorizations can conceivably be changed to provide the men required, excluding other socio-economic considerations.

The civil engineering squadron (CES) knows they do not have sufficient manning authorizations to do the job, and they have two alternatives: obtain additional manning or request a service contract. However, the CES does not have the experience or ability to make the decision as to which alternative is best.

The MET has experience in determining the cost of performing a job with in-service skills and equipment (triennial reviews).

The procurement officer could request an in-service cost review from the MET and also invite bids from private contractors. Only by comparing the two can he determine if the contract in question is in the best interest of the government.

Case III. The Construction Contract

the case

The service station work center of the vehicle maintenance function is responsible for dispensing fuel and lubricants and performing minor service to all vehicles

assigned to its base.

A management engineering study was performed on this function in 1971. The study found that on some bases the lubrication, minor maintenance, and gas pump facilities were not located in close proximity to one another. At Zero AFB lube racks were 600 feet from the pumps; at Sub-Zero AFB the distance was 350 feet between facilities.

The gas pumps were manned using "queuing models," which provided a balance in cost between gas attendant idleness and customer delay time. The total cost to the Air Force was optimized, but there was considerable attendant idleness built into the system. The distance between facilities required that the lubrication and maintenance functions be manned separately.

The study reported that "Inefficient layout of facilities forces us to pay for the inefficiency with manpower. During slack periods, gas pump attendants cannot perform other productive tasks because the distance between facilities is too great." It further recommended a standardized layout and stated that use of the standardized layout would allow all lubrications and fifty percent of minor maintenance to be performed by gas pump attendants during their idle periods. This would result in a savings of two manpower spaces at Zero AFB and three at Sub-Zero AFB.

An Inspector General report in 1972 rated the service station facilities at Zero AFB as marginal: "Pump attendants have no permanent shelter, a worn-out trailer is being used. Mo-gas tank is too small. No oil or anti-freeze storage facilities." Based on the IG's report, the base's request for construction of new facilities was approved. The purchasing officer awarded an \$11,000 contract for construction of a permanent shelter, including a storage

area and a larger gas tank, on the site of the old facilities. No change in the location of the racks was planned.

Similar discrepancies existed in the service station facility at Sub-Zero AFB, and a completely new service station was constructed in late 1973 at a cost of \$25,000. Its layout was similar to the standardized layout proposed by the earlier MEP study.

Case analysis

The contract awarded at Zero AFB was clearly an uneconomical contract. It simply duplicated existing facilities and layout at a cost of \$11,000. The Air Force still had to pay for inefficient layout with two men extra. The worth of two saved spaces is about \$19,000; in other words, the additional cost for a completely new and more efficient facility costing about \$25,000 would have paid for itself in manpower savings in the first eighteen months.

The contract at Sub-Zero AFB will pay for itself in less than two years because of the estimated three manpower spaces it will save through a more efficient layout. It was a very economical contract; however, unless the manning document for the service station is reduced, not one cent will be saved.

Who tells the reviewing authorities of the Zero AFB construction request that it would be cheaper to build a completely new facility? Who tells the Management Engineering Program that a new facility has been built at Sub-Zero AFB so that the manning authorizations can be reduced?

The Relationship

Case I showed that the purchase of a labor-saving device can change the man-hours required to do a job. This case is representative of the impact of a wide range of labor-saving devices; i.e., roller

conveyers to replace handtrucks, automatic controls to replace manual controls or power tools, and equipment to replace manual operations. The purchasing officer can reduce manning requirements through the purchase of such a device; the manpower officer must make adjustments to the manning documents. The manpower officer, in some instances, could provide information concerning a labor-saving device which may show that a potential purchase would not be in the best interest of the government. The point is, there is a relationship between the two functions on some supply contracts.

Case II demonstrated that a service contract could be analyzed on the basis of the question: "Is it the most economical way to do the job?" This case is representative of a range of service contracts awarded for laundry services, snow removal, garbage collection, or janitorial work. Only by comparing the cost of doing the job with in-service skills and the cost of using a private contractor can we determine which is the more economical method. The manpower office has experience in determining the in-service costs; the contracting office is the only agency that can solicit bids for possible service contract awards to private firms.⁸ Clearly, there is a relationship between the two.

Case III shows that an uneconomical construction contract can be entered into by the purchasing officer if he does not have *all* of the information concerning the contract. Further, it demonstrates that a change in facilities can and does change the manning requirements. The objectives of the manpower function are to develop and *maintain* manpower standards.⁹ Manpower cannot maintain these standards if it is not made aware of changes that affect them. Any construction contract that improves facilities—and hopefully most do—will affect the man-hours required by the

facility. On construction contracts, too, there is a relationship between the manpower and purchasing functions.

It is clear that there is a relationship between the functions; therefore, there should be a communication link between the two. Coordination in the best interests of the government is required.

Coordination

There would be no problem if effective coordination now existed between the manpower and procurement offices. However, it is my contention that little or no coordination exists either informally or officially. A search of procurement and manpower directives revealed no formally defined relationship or required coordination. Procurement and manpower officers stated that they did not know of any directive that outlined the interaction of the two functions. Recent discussions with procurement officers indicate that procurement very seldom consults with manpower. Similarly, discussions with manpower officers confirmed the converse of this finding. There appears to be no coordination between the two functions now; if they don't coordinate, who does?

The initial reaction of most of the procurement officers interviewed, with respect to Case I, was that a properly prepared supply purchase request is the authority for purchase. However, after the potential uneconomical implications were explained, opinion changed to: "The supply officer should have caught it." Supply officers confronted with the case stated that major air command must approve equipment changes; therefore, they should have caught the error. Supply officers agree, however, that many purchase requests do not necessarily go to MAJCOM for approval, and there is the possibility that even MAJCOM could err.

Some purchasing officers believe that on service contract requests, too, the user should determine the need; procurement acts upon validated purchase requests. However, the user does not always have the ability, experience, and authority required to determine whether a service contract is in the best interest of the government.

It was the opinion of the majority of the procurement and supply officers spoke with that coordination on construction contracts could be obtained by making the MET chief a member of the base Facilities Utilization Board. There are numerous ways that coordination can be effected between users, suppliers, contractors, and industrial engineers on supply service, and construction contracts. Why is the required coordination not clearly defined? How has private industry handled this problem?

Firms in private industry seem to agree that there must be coordination between engineering and purchasing. Some feel that "top management must insist on a clear definition of engineering and purchasing responsibility,"¹⁰ but others favor an informal relationship.

One can find dozens of articles in the journals on the relationship between engineering and purchasing. However, all these articles concern the relationship between the *technical* engineer and procurement. No one seems to mention the industrial engineer or manpower relationships. For example, the statement: "The purchasing system consists of quality control, sales, engineering, planning . . ." ¹¹ contains no mention of manpower. Why? Because in private industry the relationship between the purchase of equipment and labor requirements is basic; it is understood rather than formally defined. Industrial engineering (IE) departments routinely review all labor-saving devices

and adjust work standards immediately; time is money, and the time standards are continually updated as equipment and methods are changed. Facilities layout changes, too, are designed by or in coordination with the plant IE, who has firsthand knowledge of every change, he being intimately familiar with every part of his plant and equipment.

Private industry maintains a tight control on time-saving devices and layouts because time saved is often dollars saved. The Air Force must become just as dollar conscious. However, industry may not have the problems in coordination that are found in the larger, more complex Air Force. The Air Force needs a formal definition of this important relationship.

THE BASE-LEVEL purchasing officer does not have the information he needs to determine whether some contracts are economical. Similarly, the manpower officer does not have all the information he needs to do his job efficiently. Coordination is required!

A directive should be published that directs and defines coordination, between the base procurement function and the MAJCOM-MET operating on the same base, on all supply, service, and construction contracts that may have an impact on manpower requirements.

The essence of logistics is integration of the existing separate functions. Integration is the process of uncovering relationships between functions and developing procedures that allow them to work in unison toward their common mission. This article addresses only one relationship; there are many more that need attention. This task cannot be left to the system design teams and staff personnel: they are not miracle workers; they cannot uncover every relationship. It is the operating Air Force managers, the men who live with the problems, who can uncover ways to make the system work better. If they do, eventually we may achieve an integrated logistics system.

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Notes

1. Air Force Regulation 70-18, *Local Purchase Program*, 2 May 1968, p. 1.
2. *Management Engineering Briefings*, DPLM 3 Operating Instruction 25-7, Hq Strategic Air Command, Offutt AFB, Nebraska, 27 December 1965, p. 22.
3. *Ibid.*
4. Air Force Manual 25-5, *USAF Management Engineering Program*, p. 1.
5. Air Force Regulation 26-12, *Contract Services*, 9 February 1966, p. 9.

6. Marvin E. Mundel, *Motion and Time Study* (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1970), p. 316.
7. Air Force Manual 26-3, *Criteria and Standards*, 12 October 1965, p. 3.
8. AFR 70-18, p. 2.
9. AFM 25-5, p. 1.
10. "When Purchasing Takes Over Production Planning," *Purchasing*, Vol. 61, December 1966, pp. 45-50, 112.
11. Wilbur B. England, *The Purchasing System* (Homewood, Illinois: Richard D. Irwin, Inc., 1967), p. 122.

In My Opinion

STRATEGIC TARGETING

An Alternative Approach



COLONEL E. M. ABRAMSON, USAF (RET)

15	57	863	09	513	44	123	
356					126	24	
12					723	91	422
40					192	417	39
281					09	272	817
173					517	04	190
718	81	418	718	10	321	602	404

THE ANNOUNCEMENT some months ago by Secretary of Defense James R. Schlesinger relating to retargeting of U.S. long-range missiles again focused attention on the strategic targeting policy of this country. More recently, Secretary of State Henry A. Kissinger expressed concern over the nuclear "numbers game" that colors our relationships with the Soviet Union.

For more than a decade our targeting policy has held Soviet cities hostage to our ability to destroy them in the event of a Soviet first-strike attack. This concept of "assured destruction" of the major population centers of the Soviet Union was intended to deter the launching of a Soviet first strike on the basis that such an attack would provoke massive retaliation by the U.S. and thus would be an act of national suicide on their part.

Whether this policy was in fact the "realistic deterrence" proclaimed by former Secretary of Defense Melvin R. Laird in 1971 can be argued. What cannot be argued is the fact that—for whatever reason—the Soviet Union has not launched a missile attack against the United States or anyone else during all these years.

With continuing improvement in missile capability, particularly in the realm of accuracy, the Soviets have developed a potential for options other than a massive first strike. To counter this new potential, the U.S. must have options other than massive retaliation. Retargeting and research to improve the accuracy of our missiles are intended to provide to the President a capability for alternative responses.

The customary measurement of the

effectiveness of the assured destruction posture has been the number of fatalities our reflexive strike could impose upon the Soviet Union after our forces have absorbed a postulated Soviet first strike.

The use of this yardstick leads one almost inevitably to the major cities targeting concept. By hitting the cities, we can theoretically inflict the greatest number of fatalities with a given number of missiles of a specified yield and accuracy.

The new strategy announced by Secretary Schlesinger in fact appears to leave the concept of assured destruction in being, on a reduced scale but one which is still considered adequate for deterrence. The missiles thus made available can then be marked for target sets other than the cities, to provide the alternative responses desired.

However, target strategies cannot be designed in a vacuum. They are valid only in terms of their ability to achieve one or more specified objectives.

If our national objective in case of nuclear war is simply to inflict more casualties on an enemy than he inflicts on us, then the capability to destroy his cities if he attacks us may have strategic merit.

But one must ask: Is there really any significant variance, in terms of national survival, between fatalities inflicted and fatalities suffered when considering the meganumbers conjured up by the vision of all-out nuclear war?

The principal objectives of our strategic forces have been defined as twofold: (1) deterrence of nuclear attack upon the United States and (2), if deterrence fails, resolution of the ensuing conflict in our favor.

The concept of assured destruction may

serve admirably the first objective. But it is difficult to accept the premise that a nuclear war has ended in our favor when we have inflicted, for example, 30 million fatalities in exchange for "only" 20 million fatalities suffered. Such an exchange is hardly likely to mean much of anything but the end of both the United States and the Soviet Union as national entities.

Is there an alternative?

Our civilization operates at a highly sophisticated level of specialization. Destruction of such vital resources as power generation and distribution, fuel storage, water supply, sewage disposal, and food production and distribution (together with unavoidable concurrent casualties) could easily be more destructive than "pure" fatalities.

In this regard the economic dislocations that even now appear to accompany a relatively minor reduction in energy resources carry a pertinent message.

Large areas of the Soviet Union are less "civilized" than the United States; yet the situation just described certainly holds for the major population centers of that country, and specifically for those centers engaged in national government and international affairs.

On a scale of destruction of national resources, there is some point at which the efforts of surviving leadership must be diverted from national survival to individual survival. That point was never reached on a national scale during World War II, although it was approached at different places at different times.

Military analysts, politicians, and the press all speak of fatalities in the stratospheric millions without apparent regard for the odds against half of us surviving when the other half shall have been eliminated. Our total interdependence and—perhaps even more important—our total dependence on our resources and

the continued operation of our facilities do not appear to have been considered all.

There is no real trade-off of fatalities the higher levels. Instead, there is some level of resource loss above which it is simply not possible to conceive of the survival of either the United States or the Soviet Union in any meaningful national sense. Below that level assured destruction does not exist; above that level there is no economic or political return for dollars expended to achieve additional destruction.

Instead of holding tens of millions of citizens hostage, assured destruction—and its corollary, realistic deterrence—should thus be equated with that point on the continuum of resource assets at which the survival of the enemy as a viable, outward-looking nation terminates.

Under the concept of mutual deterrence implicit in the SALT discussions, the strategic objective of both the United States and the Soviet Union must be to retain, under any and all foreseeable circumstances, the ability to respond to an attack with sufficient force to insure the imposition of that calculated level of resource destruction at which national integrity disappears.

Defining that critical level is, of course, an extremely difficult task—a task that probably lies in the realm of the economist and sociologist rather than the military analyst. Members of those two disciplines who are thoroughly familiar with the Soviet society, with others as needed, should be able to define those resources the loss of which, when combined with an associated level of population fatalities, must compel the survivors to devote all their energy to personal survival.

It then becomes the task of the military to assure the availability of the appropriate weapons in the appropriate numbers to

inflict that necessary level of damage in the face of Soviet defenses. The measure of effectiveness must be the ability of the total strategic structure, after absorbing a first strike, to deliver a sufficient number of weapons of the proper size on the designated targets to preclude the continued existence of the enemy as an international force.

The question of credibility needs also to be addressed. It is not enough that the United States possess the right number and mix of strategic forces. It must be apparent to the Soviet Union that we have those forces, that they are in fact sufficient to the objective, and that we have the national will to use them.

In addition, there are of course subordinate strategic objectives: maintenance of the sovereignty of our airspace, limiting damage from small-scale attacks (accidental or intentional), deterrence of attack on our allies, etc. Other measures of effectiveness must be developed in terms of these

specific objectives and our strategic structure modified if necessary to accommodate them. In some cases forces necessary to meet one objective will at the same time satisfy another; in other cases changes or additions to the basic force may be needed.

The presence of peripheral issues does not, however, affect the validity of the point made here. The objectives of our strategic forces must be meaningful, not based on statistical escalation without regard for the significance of that escalation. If "one" is good, "two" is not necessarily or automatically better.

Assured destruction lies not in the realm of tens of millions of fatalities—despite the terror value of such numbers—but rather in the coldly calculated ability to terminate the existence of the enemy in terms of his potential to continue to operate in the international arena as a viable national entity.

Annandale, Virginia

COMPUTER IMPACT ON THE ORGANIZATION

MAJOR GLENN F. PRIBUS

THE rapid growth of computer use in business, government, and the military services has led to much speculation concerning the impact computers will have on the using organizations. Early investigation on the organizational impact of the computer by academic researchers suggested that the conventional hierarchical pyramid would be replaced with new organizational patterns. It was felt that there would be a significant change in traditional organizational concepts including structure, middle management roles, centralization versus decentralization, and the interrelationships between functional elements.¹

The purpose of this article is to investigate these predictions with a view toward forming conclusions regarding the hypothesis that the new information technology (specifically computers and electronic data processing systems) will have considerable impact on computer-oriented organizations.

structure change

In 1958 a now famous article predicted that in place of the classic organizational pyramid the future structures of computer-oriented organizations would resemble a football balanced atop a church bell.² The football was to represent complete centralization of the many management functions that were formerly spread in small pieces throughout the organization.

Now, more than 15 years later, many authorities feel that these implications

have yet to be realized. Nevertheless, they do recognize that in some cases the classic hierarchical pyramid structure has taken on a bulge around its middle, the bulge reflecting obsolete management.³ Authorities also feel that the growing alliance between top management and computer technology is still very likely to have considerable additional impact on organizational structures. This point of view is based on the tendency for an increasing number of computer personnel to report directly to top management, which shows an increasing high-level involvement in this function and supports the idea that a "new management" is evolving.⁴ This tendency is illustrated by a sampling of 330 business firms covering the spectrum of industry types and sizes. In over half of the sampled firms, the Data Processing Manager reported to a Vice President (107 cases) or Chief Executive Officer.⁵

The reasons for the growth in interest in computer systems by top management are readily evident. By the mid-1970s it is felt that computer systems will no longer be mere tools for accomplishing business functions; they will be thoroughly immersed in tactical planning. By the mid-1980s John Diebold sees computers as "the heart of the structure" and expects all levels of management to be involved in one or another information processing activity.⁶ The advent of integrated computer systems that are not limited to specific projects, problems, or functions is forecast to provide a positive basis for the whole decision-making spectrum. Thus,

ata for the entire management process will soon be possible from computerized information systems.⁷

Harold Wolff, a management consultant who led a panel session on "the new management" at an annual meeting of the Institute of Management Science (TIMS), says one characteristic of this group is their point of view that "change is one constant fact of life." As a result, the group insists that organizational flexibility is the prime requisite for good management, rather than rigid structures with clearly defined job descriptions and lines of authority.⁸

While a great deal has been written concerning the impact of computers on organizational structures, there was little empirical evidence supporting the various conclusions. As a result, a plant facility of a large, nationally known company employing several thousand employees was studied to determine the influence on installed computer systems. The conclusions:

1. Computers provided many benefits to the company through reduction in manual effort, improved performance, cost savings, and more timely information for decision making and control purposes.

2. Computers resulted in organizational change and, in many cases, upheaval. Departments became combined, functions became obsolete, and positions were eliminated; all resulting in a change in managerial philosophy toward organizational relationships.

3. Failure to recognize the importance and the extent of such changes will jeopardize the best technically designed systems. The result may be the loss of key personnel and sabotage of the system to the extent that technical information gains are negated.⁹

Further validation of the structural impact of computers is provided in reports that such companies as Ling-Temco-

Vought, Dow Chemical, Pillsbury, General Electric, General Mills, and many others have had or are now experiencing many organizational changes resulting from computer installation. In addition, special organizational development departments to provide expertise in organizational planning have been established at companies such as the Hotel Corporation of America and Federated Department Stores.¹⁰

Another article states:

Most current theories of structuring organizations stress the concern for humanizing the organization. . . . What needs to be recognized is that technology may also exert an important effect upon the structures of the organization and may help determine the tasks toward which the other . . . components of the organization structure strive.¹¹

On the other hand, for those who think change is necessary for the sake of change or to keep up with the times, James D. Webb, NASA's former administrator, warns and insists that the dimensions of any new computer-organization system are impossible to determine in advance. His rationale: "The critical factors arise out of the environment in which the systems are being devised, and that environment is constantly changing."¹²

middle management

Concomitant with a change in organizational structure, many theorists and practitioners foresaw a radical change in the status and functions of middle management. It was felt that the middle management functions of planning, computer programming, and research and development would take on increased importance because innovation and creativity would become increasingly vital to top management as the volume of computer informa-

tion increased. Most middle management functions, however, were predicted to become less and less important as these jobs became largely routinized through the computer's ability to process many ordinary repetitive decisions.¹³

. . . we think that the horizontal slice of the current organization chart that we call middle management will break in two, with the larger portion shrinking [and sinking] into a more highly programmed state and the smaller portion proliferating and rising to a level where more creative thinking is needed.¹⁴

The rationale behind this prediction is that the typical decision situation at the middle management level is highly structured and is accomplished through specific programs that are entirely amenable to computer logic. These decisions are composed of identifiable quantified elements capable of being rigorously manipulated.¹⁵ Therefore:

A changeover to Electronic Data Processing appears to accelerate the level of formalization within the organization. The organization of work is further rationalized; rules and regulations are substituted for individual decision making. As a result of programming, decisions (those with known criteria) formerly left to individual employees are now made by the computer. With the programming of this area of decision making, important functions and even certain positions within the organization are eliminated.¹⁶

On the other hand, there are many viewpoints contrary to this pessimism. One such point of view is that of "the greater challenge,"¹⁷ in which it is believed that as middle managers are freed from programmable decisions they will be able to devote themselves to true managerial functions. Herbert A. Simon concludes that, while programmed decisions lend themselves to computerization and unpro-

grammed decisions do not, the gulf between them and the effect on middle management is not as great as seems to have been imagined.¹⁸ Thus, he feels that however great the progress in computer decision-making, the major part of middle management decision-making has not been, and probably never will be, amenable to computer manipulation.

A research study of eight companies, a with at least two years' experience with computers, lends credence to this conclusion.¹⁹ Fifty-three middle managers and fourteen top managers reported that, because the computer had relieved middle management of many petty administrative details, these jobs had grown in complexity and importance. There was no evidence from the study that middle management would be eliminated, that their positions would become highly structured that they would become mere specialists in computer techniques, or that their jobs are taking on the characteristics of pure leadership or supervision. In some cases, instead of reducing the role of the middle manager, the computer has made possible the expansion of existing operations and has resulted in the addition of middle management positions.

Another study gives further support to this viewpoint by showing that the effect of the computer can be a decrease in the decisions reaching top management for resolution.²⁰ This study of one hundred top managers over a fourteen-month period revealed that top management rarely made *direct* use of the computer as a decision tool. When it did, the computer was used to provide support for middle management decisions. Therefore, it would appear, many believe that:

The automation of decision making, irrespective of how far it goes, and in what directions it proceeds, is unlikely to obliterate the basically hierarchical structure of

organizations. The decision process will still call for departmentalization and sub-departmentalization of responsibilities.²¹

A third, intermediate viewpoint is that while middle management jobs will become more challenging and rewarding, the number of jobs will be significantly reduced.²²

The conclusion to be derived from this discussion appears to be that the middle manager, regardless of the final realized impact of the computer on his level, must improve his abilities and acquire an understanding of computers if he desires to compete effectively in the future. The middle manager who complains that the computer has turned him into a conforming, insecure clerk was probably a conforming, insecure clerk to begin with. "Where the middle manager stands with respect to the computer will depend not so much on the computer, but on the manager himself."²³

centralization

During the past several decades there has been a trend toward the decentralization of large organizations because size, complexity, and diversity have made it increasingly difficult for a central authority to exercise direct control. With the advent of more complex and sophisticated computers, there are many proponents of the theory that this trend will be reversed. They base their thinking on the proposition that a computerized data system can provide one person in a central position with the total information needed for decision-making and control. Thus, the need for decentralization will be alleviated.²⁴ This is because

. . . if the total information . . . is all together at one place, it seems illogical to communicate it, in segments, to several

persons for purposes of making only limited decisions. The organizational implications . . . point to a broadening of the span of control assigned to any one position and fewer echelons overall.²⁵

Also, as computer technology has improved, computers have become much more accessible, understandable, and easier to use. Because of teleprocessing, time sharing, and user-oriented computer languages, top managers are now able to use computers directly. As a result, many managers find that it is no longer necessary to work through intermediaries, thus facilitating a move toward greater centralization.²⁶

Another argument given by the centralization proponents is that computers cause an increasing integration of work processes resulting in less autonomy for each functional area in setting the work pace for its individuals and groups. Because the computer causes this interdependence, there is a greater need for central control. To effect the control needed, it must be moved to the highest levels in the organization so that complete cognizance of the entire operation is maintained. In consequence, final responsibility and control are placed in a very limited number of top management positions, resulting in a shift toward centralization.²⁷

The logic that computers make centralization the most effective and efficient decision-making locus has been criticized on several points. First, many managements have not been able to use their data to full potential. Historically, data management has developed somewhat haphazardly through the years, and computer applications have not been integrated. As computer complexity and capabilities increased, there have been many new potential applications, but these have been mainly designed for specific operational use or for specialized staff functions.

Hence, management of data has continued to develop in fragmented fashion and at rather low organizational levels—at sub-departmental or sub-staff level.²⁸

Second, it was not the lack of information that caused decentralization; it was that top management lacked the time to make all but the few most important decisions. The increase in amounts of information made available by computers compounds the problem instead of alleviating it. Third, even when aided by the computer, top managers will still be unable to maintain enough expertise in all aspects of their business to make the best possible decisions.²⁹ Fourth, decentralization is often thought to be the best trend because it brings the profit motive to bear on a larger number of management personnel. Since it allows profit goals and related decision-making activities to be established in decentralized units, there is a greater likelihood that the managers of these units will reinforce the goals of top management.

Finally, and related to all these points, the managerial function is frequently too complicated and thoroughly diversified to be allocated to one centralized body. Decentralization separates groups of related activities and permits simplification by allowing decisions to be made by the most relevant organizational divisions.³⁰

Paradoxically, there is evidence that a centralized computer system might even result in an increase in decentralization. The system, in providing top management with information on all aspects of the business, will permit a closer comprehensive check on what is happening at all decision-making levels. Therefore, it might be practical for top management to delegate certain decisions, formerly made centrally, and only raise the level of certain decisions when the information received points to the need to make an exception.³¹

Studies on the centralization-decentralization question show conflicting evidence. Pillsbury, which makes extensive use of the computer in daily operations as well as in top-level planning and decision-making, is illustrative of what happens when the new technology becomes an important aspect of management. " 'We had this idea of decentralizing and diversifying 10 or 15 years ago,' recalls President Terrance Hanold. But instead of immediately reshuffling its organization chart, Pillsbury did a curious thing: It began its decentralization by first becoming more highly centralized. And only now, a decade later, has it moved formally to create what Hanold calls 'free-standing firms' within the corporation." ³²

In another study, when a computer system was installed in the home office of a medium-sized insurance company the result was found to be an increase in central control and decision-making.³³ On the other hand, in another company where each regional office has its own computer, there was an increase in decentralization toward these offices.

the new breed

The number of people in the United States employed as computer system analysts has grown from a mere handful in the early 1950s to nearly 200,000. This number is expected to double by 1980.³⁴ Initially, computer equipment was located in the Accounting Department and used as an ultra high-speed tabulator.³⁵ Gradually, however, as the computer became more sophisticated, there was a need to utilize it more fully from a profitability standpoint. Thus, use in the functional areas of personnel, production, and marketing, to mention a few, became commonplace.³⁶ As a consequence, there was a general recognition of the need for a

separate function to deal with the information services provided by the computer. This function, frequently a new function staffed by computer experts, is often not defined to other organizational members, a factor that is likely to cause considerable unrest and/or mistrust. The frequent result is that the function's members are referred to as "the new breed," "the new theocracy," "prima donnas," "industrial carpetbaggers," and the like, whose primary function is considered by some to be the undercutting of the operations and authority of other departments.³⁷ In addition, because it is a new management resource and often not completely understood, the computer function is frequently allocated a measure of autonomy that is seldom if ever enjoyed by other areas. It designs its own projects, makes changes it thinks expedient, and hires its own personnel.³⁸

The introduction of the computer is fraught with organizational difficulties because while EDP managers can say, "Top management wants this conversion," they cannot say, "Top management wants it done this particular way." Thus, while the EDP manager has little hierarchical authority to introduce specific changes in the organization, he usually resolves this hierarchical ambiguity by asserting his *expert* authority which is difficult for the average manager to challenge due to lack of EDP knowledge.³⁹

Therefore, in their primary concern and effort to get more information faster, the computer personnel may be artless in their relationship with other functions.⁴⁰

This is complicated by the fact that research findings have shown that a high-level location contributes to efficient and effective functioning of the information systems. Computer staffs achieving above-average results are most often located just one level below the chief executive. On

the other hand, those placed two more levels below the chief executive achieved only average results.⁴¹

The conclusion is that the problems I have discussed arise most frequently through failure of top management to clarify the role of the "new breed" for the new breed people themselves and for the entire organization.

In many organizations, a critical element needed for change—the collaborative process—is missing. In order for a planned change to be effective, there must be a relationship established between the giver and receiver of help so that control and dependency are balanced. . . . There must be a joint effort that involves mutual determination of goals . . . and a complete investigation of the structural, technical, and personal factors affecting the relationship between EDP personnel and the rest of the organization.⁴²

In this regard, it is essential that planners make recommendations, management scientists make computer models, and line managers make *decisions*. Recognition of this point has been identified as the most important factor in the success of computer project integration into the organization. While some overlap of roles is often necessary, real organizational problems are likely to result if decision-makers delegate or leave decision-making responsibility to computer personnel, or when computer personnel attempt to take over the decision-makers' responsibility.⁴³

In addition, top managers should recognize that the majority of problems arising in connection with computers are people problems. Based on studies conducted in cases where small-scale computers were installed, those companies that promote existing employees to computer positions seem to be able to eliminate or reduce many people problems, especially those related to staffing.⁴⁴

conclusions

It is evident that there are many conflicting opinions as to the impact of computers on the organizations that use them. Two significant factors in this respect are semantics and the mode of employment of the computer. The problem of semantics arises simply because key words—such as middle management, centralization, programmed/nonprogrammed decisions—are interpreted differently by different people. The influence of computers depends on the way they are employed and on the length of time they are in operation. When the computer is viewed as functional bookkeeping hardware, its use does not result in conspicuous change. When it is viewed as a management system, its installation may result in drastic and extensive change.⁴⁵

And so, “despite more than a decade of rapid expansion of the use of computers and growing sophistication in their application, the patterns of change are not yet clear.”⁴⁶

Nevertheless, some tentative observations are possible regarding military organizations:

- *Structure.* The computer should not radically change organizational principles that are valid and enduring. Change should only be made in the application of these principles.⁴⁷ As a result, a model of the structure of military organizations using computers will closely resemble that of the ones not using them. These organizations will still have the conventional three layers of top management, middle management, and the operational level. The organization will still be a hierarchy. Although distinct lines between some divisions and departments may tend to fade, there will still be a structure that is divided into parts and those parts into subparts and so on, much resembling the form of organi-

zation that has been traditionally familiar.⁴⁸

- *Middle Management.* Although computers have affected and will probably continue to affect the content of middle management jobs, they will not destroy them. Because they are relieved of many routine, repetitive, programmable decisions, middle managers will tend to be more fully utilized on the unstructured aspects of their jobs.⁴⁹

- *Centralization versus Decentralization.* In order to facilitate computer systems integration, the trends toward decentralization may be slowed or partially reversed. However, it appears that in the final analysis there will not be as great and radical a shift toward centralization as some may think. Just because an organization centralizes its computer activities is no reason for it to alter the existing degree of centralization or decentralization of authority.⁵⁰

- *The New Breed.* Although the role of information specialists in computer functions will take on greater significance and their influence will be increasingly felt throughout the organization, they will not take over top management of the organizational functions they support. It is clear that a prime responsibility of top military management is to provide sufficient guidance to computer personnel, and information to other organizational functions they support, so that confusion, unrest, and mistrust do not become organizationally disruptive. This role of top management is vital and essential because computer specialists must function in an established organizational environment. By understanding that environment, the personnel in it, and their roles, management can greatly facilitate the effective, efficient operation of a computerized data processing activity in conjunction with its users.⁵¹

Notes

1. Ida R. Hoos, "When the Computer Takes Over the Office," *Harvard Business Review*, 38 (1960), p. 102.
2. Harold J. Leavitt and Thomas L. Wheler, "Management in the 1980's," *Harvard Business Review*, November-December 1958, pp. 41-48.
3. James C. Criss, "The Out-of-Date Employee in an Up-to-Date World," *Journal of Systems Management*, October 1973, p. 39.
4. "The 'New Management' Finally Takes Over," *Business Week*, August 23, 1969, p. 59.
5. Robert J. Greene, "The DP Manager's Status," *Datamation*, June 1974, p. 66.
6. Walter A. Kleinschrod, "Computers and Middle Management: Where Are We Now?" *Administrative Management*, May 1969, p. 22.
7. Robert Anderson, an address given at the 1974 Annual Conference of the Association for Systems Management, *Journal of Systems Management*, June 1974, p. 20.
8. "The 'New Management' Finally Takes Over," p. 59.
9. Doyle Z. Williams and Sexton Adams, "Computer Technology and Organizational Change," *Management Accounting*, September 1968, p. 48.
10. "The 'New Management' Finally Takes Over," p. 60.
11. W. F. Blose and E. E. Goetze, "On-Line Processing," *Journal of Data Management*, March 1969, p. 26.
12. "The 'New Management' Finally Takes Over," p. 62.
13. Leavitt and Whisler, p. 41.
14. *Ibid.*
15. Melvin Anshen, "Manager and the Black Box," *Harvard Business Review*, 38 (1960), pp. 85-92.
16. Lawrence K. Williams, "Observations on the Dynamics of a Change to Electronic Data Processing Equipment," *Administrative Science Quarterly*, 5 (1960), p. 251.
17. D. H. Sanders, "Computers, Organization and Administration," *Advanced Management Journal*, 34 (1969), p. 76.
18. Herbert A. Simon, *The New Science of Management Decision* (New York: Harper and Row, 1960), pp. 14-20.
19. Donald R. Shaul, "What's Really Ahead for Middle Management?" *Personnel*, November-December 1964, pp. 8-16.
20. Rodney H. Brady, "The Computer Impact on Top Level Decision Making—Today and Tomorrow," *Management Review*, 56 (1967), p. 31.
21. Simon, p. 42.
22. Sanders, p. 76.
23. Kleinschrod, p. 23.
24. Gilbert Burck, "Management Will Never Be the Same Again, Part V," *Fortune*, August 1964, pp. 125-26.
25. Gordon L. Murray, "Information Technology and the Professional Accountant," *Management Services*, November-December 1967, p. 19.
26. Robert H. Hayes and Richard L. Noland, "What Kind of Corporate Modeling Functions Best?" *Harvard Business Review*, May-June 1974, p. 108.
27. James D. Thompson and Frederick L. Bates, "Technology, Organization, and Administration," *Administrative Science Quarterly*, December 1957, pp. 325-43.
28. Richard L. Noland, "Computer Data Bases: The Future Is Now," *Harvard Business Review*, September-October 1973, pp. 101-2.
29. J. Dearden, "Computers: No Impact on Divisional Control," *Harvard Business Review*, January-February 1967, pp. 99-104.
30. Simon, p. 44.
31. Dearden, pp. 100-101.
32. "The 'New Management' Finally Takes Over," p. 62.
33. Jack Stieber, "Automation and the White Collar Worker," *Personnel*, November-December 1957, pp. 8-17.
34. Richard Booker, "Recruiting the Right People," *Computer Decisions*, September 1973, p. 60.
35. Sexton Adams and Doyle Z. Williams, "Information Technology and the Accounting Organization," *Management Services*, September-October 1966, pp. 15-23.
36. W. H. Guin, "EDP Systems in Organizational Structure," *Management Accounting*, 48 (1966), pp. 45-66.
37. Avner M. Porat and James A. Vaughn, "Computer Personnel: The New Theocracy—or Industrial Carpetbaggers?" *Personnel Journal*, July 1969, p. 540.
38. Hoos, p. 109.
39. Porat and Vaughn, p. 541.
40. Hoos, p. 109.
41. Dr. William E. Reif and Dr. Robert M. Monczka, "Locating the Systems Department," *Journal of Systems Management*, December 1973, p. 30.
42. Porat and Vaughn, p. 543.
43. John S. Hammond III, "Do's and Don'ts of Computer Models for Planning," *Harvard Business Review*, March-April 1974, p. 118.
44. Michael W. Cashman, "Studies in Small-Scale Computing," *Datamation*, June 1974, p. 47.
45. Hak Chong Lee, "The Organizational Impact of Computers," *Management Services*, May-June 1967, pp. 39-41.
46. *Ibid.*, p. 41.
47. Blose and Goetze, p. 18.
48. Simon, pp. 49-50.
49. Anshen, pp. 85-92.
50. Sanders, p. 72.
51. Dr. Joan G. Schroeder, "Helping the Manager User," *Journal of Systems Management*, November 1973, p. 17.

Books and Ideas

THE
"HOW TO" OF
WEAPON BUYING

LIEUTENANT COLONEL DAVID N. BURT



START ↑

DR. J. RONALD FOX, the Assistant Secretary of the Army for Installations and Logistics in 1969-1971, is uniquely qualified to review the government's approach to acquiring weapon systems. During seven years with the Department of Defense, he was presented the Exceptional Civilian Service Award by the Secretary of the Air Force and the Distinguished Civilian Service Award by the Secretary of the Army for his achievements in improving the weapons acquisition process. While an Associate Professor of Business Administration at the Harvard Business School, Dr. Fox conducted and directed research in the area of systems acquisition and conducted a course in project management and defense aerospace marketing. He has been a consultant to government and industry, with emphasis on systems acquisition.

Dr. Fox's new book, *Arming America*, is analytical and thought-provoking, a constructive analysis of how we acquire weapons.† It is a sequel to *The Weapons Acquisition Process: An Economic Analysis* (1962) by Merton J. Peck and Frederic M. Scherer, and *The Weapons Acquisition Process: Economic Incentives* (1964) by Scherer.

Each year the Department of Defense spends approximately \$25 billion to develop and produce the weapon systems essential to the security of the nation. This represents a significant commitment of the nation's resources. Competing alternatives for the use of these resources, the pressures of inflation, and the great uncertainty as to how much defense capability is enough all demand that constant attention be paid to the process of acquiring weapon systems.

In contrast with works such as A.

Ernest Fitzgerald's *The High Priests of Waste* (1972), Dr. Fox's book is not an expose. Rather, it is an attempt to pinpoint the most fundamental breakdowns in the acquisition process. Dr. Fox describes a multitude of key problems and deficiencies within the acquisition process. These fall in two categories: institutional and procedural.

institutional problems

Fox sees the most crucial problem in the systems acquisition area as the selecting, training, rewarding, and controlling of military and civilian personnel charged with the responsibility of procuring our weapon systems. In 1971 a General Accounting Office representative stated that only fifty percent of the professional personnel in one of the service's procurement and production offices were qualified to do their jobs. Very few of the senior military officers in program management possess the required experience and formal management training required for key program management activities. In 1962 Peck and Scherer observed that it usually takes one or two years for a person to obtain a thorough working knowledge of the technology and personalities involved in a complex weapon program.

Most officers believe that procurement assignments are detrimental to their careers. They look upon a procurement assignment as a liability, a "dead end" to the development of their careers. In addition, the personnel system appears to place most emphasis on scientific or engineering expertise as a prerequisite to key program management positions. A gen-

† J. Ronald Fox, *Arming America: How the U.S. Buys Weapons* (Cambridge: Harvard University Press, 1974, \$15.00), 484 pages.

eral officer in a large buying command commented that "one of the causes of our current problems arises from the fact that we failed to recognize that a program manager must be a business manager and need not be an expert scientist or an expert engineer." Dr. Fox quotes David Packard, Deputy Secretary of Defense, testifying in 1971 before the House Armed Services Committee:

A very crucial problem area in the past has been that project officers were not doing an adequate job. This resulted from many factors, including assignment of managers who were poorly selected or who lacked proper training for the job, inflexible service rotation policies which made it impossible for a manager to stay with a program long enough to be effective, and the effects of permitting too many people to get in on what the program manager should have been doing himself. Solution of this problem requires that we select more capable project managers and staffs and leave them on the job long enough for them to be effective. We also must give project managers the special training in development and procurement they need in order to do their job properly. (p. 200)

The majority of the key positions in program offices are filled by civilian employees. Unfortunately, the Civil Service puts more emphasis on longevity than on expertise. Contractors describe many of the key civil servants who staff program offices as tired men who have worked their way up over a period of twenty to thirty years.

Our existing organizational structure for acquiring weapon systems requires that we have both an efficient system program office (SPO) and an equally responsive and efficient contract management activity whose mission is to insure that the terms and conditions of the contract are met. A March 1971 Air Force Association report indicated that the contract management

offices are undermanned and staffed with inexperienced personnel, that military grades are too low to be effective, and that personnel have become contractor oriented after long terms of duty at the same plant. (p. 220)

Fox indicates that better education and training are essential for both military and civilian personnel assigned to program offices and to the contract management function. Civil Service personnel are often sent to training programs as a reward for loyalty and longevity of service, not on the basis of capability or potential. Military personnel frequently are sent on the basis of their availability rather than the need for them. The Blue Ribbon Panel emphasized the urgency of upgrading contract negotiation personnel and the system for promoting and rewarding them.¹ Most defense procurement actions take the form of negotiated contracts. Department of Defense personnel who negotiate these contracts deal with negotiators from industry who are key personnel with much greater experience. Further, they are better trained and paid than their DOD counterparts. The Defense negotiator is thus at a disadvantage, to say the least. Government negotiators' skills obtained through experience are often wasted by the existing system of rewards, which appears to promote the most capable negotiators to supervisory positions thereby removing them from direct negotiating activities. Contract negotiation is a special skill, different from and often more difficult to develop or acquire than are administrative or supervisory skills. A system of rewards for negotiators should be developed which is commensurate with their skills and does not necessarily require their removal from active negotiations.²

According to Dr. Fox, one of the major problems in the area of sound contract

management is that personnel assigned to this function become too concerned with the contractor's well-being. The existing reward and penalty structure within the Department of Defense normally results in program managers' and plant representatives' being motivated to maintain the cooperation of their contractors, to avoid problem identification, and to be cautious in their attempts to emphasize efficient program controls. The plant representatives frequently have become a buffer between the program office and the contractors. Often government representatives make a better case for the contractor than he can for himself. Since the number of employees and promotion opportunities at a contract management office are determined by the amount and type of defense business at the plant, government representatives assigned to a plant for a number of years want the contractor to obtain new business in order to protect and further their own careers.

Civilian appointees at the level of Secretary and Assistant Secretary of Defense and corresponding positions in the Army, Navy, and Air Force control few of the incentives or penalties required to motivate senior military and civilian personnel. These appointed officials are dependent on good working relations with the military and career civilian employees and are reluctant to override or otherwise control these individuals for fear of being cut out of the information process, thereby losing any authority they may possess.

And Congress does not effectively review and control defense spending. The budget recommended by the Department of Defense is only slightly affected by Congressional debate. One reason for the poor performance by Congress is the committee members' lack of preparation. Congressmen and senators serving on authorization and appropriation commit-

tees rarely read the material gathered by their staffs in preparation for the hearings. The defense services underestimate the cost of the programs they request in the hope of obtaining approval to begin programs. Congress has very little capability to analyze and challenge service cost estimates. The detailed nature of annual authorization bills and the yearly incremental approach cause numerous problems and inefficiencies. The one-year budgeting system, for example, results in agencies that do not spend their entire appropriation being penalized in subsequent years. Costly delays result because Congress is so slow in providing funds. Congress seems much more inclined to concentrate on and interfere with the research and design phases of a program than to challenge defense witnesses who contend that a system is ready for production.

Parochial tendencies exist on the part of military planners in each of the services, resulting in the placing of their service's needs above the well-being of the entire defense establishment. This frequently results in suboptimization. After originally underestimating the cost of a program, the service obtains additional funds through request for supplementary funds and reprogramming from other less desirable programs.

The enormous size and complexity of defense programs, the need to negotiate thousands of contract changes, and the government's emphasis on timely completion—all contribute to a relationship of mutual dependence between the Department of Defense and its prime contractors. The DoD program management and contract management offices are frequently viewed as adjuncts of private industry. Yet the interests of government and its contractors are basically different.

The program manager is charged with

two frequently conflicting roles. First, he is or should be a guardian of federal funds. Second, he must be the project's strongest supporter, whether he sees the need for it or not. He must be optimistic in his role as the program advocate. The existing rewards and penalties structure causes the program manager to place more emphasis on his marketing role than on his program management role. Program managers are rewarded for making their programs bigger. No project manager was ever promoted for making his program smaller. An advocate cannot be an impartial judge, and yet the program manager is assigned both roles.

procedural problems

Dr. Fox has also identified several procedural problems that he feels require attention. The source selection process comes in for severe criticism. It is not at all clear that the current process provides for selection of the contractor who will provide the best product at a reasonable cost. Personnel associated with the source selection process appear to be extremely averse to risk. Based on experience, they have learned that selection of a contractor other than the one offering the lowest "proposed" price results in a great deal of extra work, possible protests, and program delays.

Defense personnel have sometimes been unwilling to penalize contractors who have failed to perform in accordance with the terms of their contracts. In the process we have allowed companies to become lax in achieving adequate control of our defense programs.

Industry has a tendency to promote engineers into key program management positions. Unfortunately, such managers consistently emphasize technological achievement, with minor attention to planning, budgeting, and control activities.

When a new weapon system is being acquired by a military service, the most technologically sophisticated components are usually incorporated into its design whether or not they actually improve the system's performance. This is usually a matter of military pride and prestige rather than operational necessity.

Our current approach to pricing results in rewarding contractors for inefficiency. Typically, profits are based on cost, resulting in a reverse incentive to cost reduction. When the government is unable to determine how much a weapon system should cost, there is little pressure on the producer to reach the highest level of efficiency. His costs tend toward the government's upper budgetary limit. Past cost experience—often the most convenient standard for measuring efficiency—becomes a misleading indicator of future costs.

Many government and industry members are more concerned with controlling funds than controlling the cost of work. As a result, few program management officials measure cost performance and there is no way to tell during a program whether work is costing more or less than estimated.

Government specifications have become so detailed that we have provided industry with limitless opportunities to propose contract changes, thereby weakening the incentives provided in the initial contract agreement. With few exceptions, the control of changes during a program is so lax as to result in great inefficiency. The contractor has no incentive to control costs of changes when work is fully completed before negotiations take place. The services do not have enough trained personnel to make effective analysis of the impact of proposed changes. The net result is significant cost growth after award of our contracts.

recommendations

Dr. Fox proposes several recommendations to deal with these problems. The first and most significant reform he recommends is the establishment of a procurement career field within the military services, with senior procurement managers controlling assignments and promotions. Advancement would be based on management capability and performance. Assignments and promotions would be controlled solely by senior procurement officials. A sufficient number of colonel/captain and general/admiral positions would be created to reward officers in this field for distinguished service.

A comprehensive training program should be established for military and civilian servants who wish to devote their careers to program management and procurement.

More and better-trained personnel must be assigned to pricing, negotiating, and contract management functions. (It should be noted that the Air Force has an aggressive program in this area known as "Copper Cap.")

A viable system of incentives, rewards, and penalties must be established so that civilian appointees to senior Pentagon positions have the power and authority to change direction of procurement management.

The year-by-year Congressional review process must be revised to aid and encourage long-range planning. Congressional staffs must be increased with qualified persons in order to make proper evaluations of Department of Defense proposals. The additional analytical capabilities required to perform the necessary Congressional review and analysis could be achieved in two ways: (1) the General Accounting Office could be authorized to expand the scope of its investigations and (2) the full-time staffs of the House and

Senate Armed Services Committees and Defense Appropriations Subcommittees could be strengthened by a generous addition of trained analysts. And Congress must demand accountability from DoD officials and stress civilian control of the military.

Control of defense expenditures must be recentralized under the Secretary of Defense in order to temper the parochial tendencies of military planners, establish balance in defense priorities, and work toward an effective and efficient use of defense appropriations. Such a recentralization of control requires the reinstatement of a strong systems analysis organization in the Office of the Secretary of Defense.

A single position should be created within the Office of the Secretary of Defense and within each of the three military departments with responsibility for materiel acquisition.

Government members and government plant representatives must be sufficiently independent of the contractor to report inadequate performance to higher echelons of the Department of Defense, to instigate corrective action, and to enforce penalties.

Marketing responsibility (the advocacy of weapon systems required to meet defense needs) should be given to the using command or service headquarters, instead of the program manager.

The source selection process should be revised to require less time and less paperwork. Contract specifications should be significantly reduced. Further, the source selection process should be revised to select the contractor most likely to perform the project in a satisfactory manner under stated budgetary and time constraints. Price competition is not a feasible concept in selecting contractors for multimillion-dollar defense programs. The government should adopt a program where-

by a formal design and capability competition is held on major programs to determine which two producers will develop prototypes for selected parts of each new weapon system. The contractors will then engage in competitive prototype development. The company that develops the winning prototype will be awarded the production contract for the weapon system. In addition, both contractors will be retained for research and development leading to the next generation of prototypes. New development and production programs should begin every two to four years.

In addition to the institutional changes recommended, Dr. Fox advocates several procedural changes.

Industry should be encouraged to put business managers into project management in lieu of their present predisposition to promote engineers to such positions.

Every two years, small development programs should be authorized in the various areas, such as close air support, sea patrol, etc. The incremental improvements that have been satisfactorily developed and tested would then be incorporated into the appropriate weapon system. Since new development programs would begin at regular intervals, the sense of urgency would be minimized and there would be no need to pack unnecessary technology into every program. The outcome of such a low-keyed approach to acquisition would be a sense of stability and continuity.

In order to break out of the dilemma posed by cost-based profit determinations, the Department of Defense should place significant emphasis on the amount of contractor capital employed. This approach would result in profit being based on a combination of cost and capital employed.

The "should cost" approach should be mandatory on all large dollar procurements; thereby qualified industrial manufacturing and production engineers, together with procurement personnel, would review a contractor's approach to developing and producing a system and determining what the item should cost if developed and produced efficiently.

Program managers and their personnel and industrial managers must be trained and encouraged to emphasize cost control in lieu of funds control.

The Department of Defense should hire one or more independent organizations to conduct periodic audits of program performance.

Once contracts are negotiated, program managers should keep a tight rein on contract changes. Formal change boards staffed by cost specialists should withhold approval of each recommended contract modification until the contractor has prepared a revised cost estimate.

I BELIEVE that systems acquisition is the most challenging and most crucial function in our defense establishment. While appreciating the importance of the combat and training people, my logistics brethren, and the many others, I believe that, unless drastic improvements are made in how we determine and program for requirements, how Congress approaches the providing of funds, and how we acquire the needed weapon systems, we will not have the systems needed to implement our national policies in the international arena. The best pilots, comptrollers, and maintenance personnel cannot long overcome a deficiency in the quality and quantity of our weapon systems.

I am familiar with most of the deficiencies which Dr. Fox cites, and in general I concur with his recommendations. We and many others—both military and civil-

ian—are concerned with improving the weapons acquisition process.

School of Systems and Logistics, AFIT

Notes

1. Report of the Blue Ribbon Panel to the President and the Secretary of Defense on the Department of Defense, July 1, 1970.

2. *Ibid.*, p. 95.

SOME SENSE AND SOME NONSENSE

Two Soviet Books on War, the Army, and Strategy

DR. KENNETH R. WHITING

WE ARE NOW in the midst of a somewhat raucous debate about the blessings or the shortcomings of the American-Soviet détente, a debate that seems to be generating more heat than enlightenment. The debaters range from those at one extreme who see détente as the portal to the Elysian fields of perpetual peace to those at the other extreme who bemoan the city-slickering of the Americans at SALT I and see détente as a Russian ploy to obtain American assistance in the attainment of military superiority. The truth is probably at some point between the extremes, but it is awfully hard to say where. Reading the Soviet views on détente does not help much since what Mr. Brezhnev says at a summit is often belied by what his military people write in their professional journals and books. Apparently the Soviet controlled media, like the Western press, have their

share of extremists at both ends.

Although much of Soviet military writing is perforce so much Greek to those who do not read Russian, there is enough of it in English translation to enable an energetic American reader to gain some access to the arcane realm of Soviet military thought. And now there is being published, under the auspices of the USAF, a series of Soviet military books in English translation, the whole series entitled "Soviet Military Thought." The first of the series, Sidorenko's *The Offensive*, came out in 1973.† The second, *Marxism-Leninism on War and Army*, became available in 1974.†† Both are representative of the best in Soviet military literature, and a careful study of them should enable the American reader to gain some insight into the thinking processes of the Soviet military theorists. But it is only fair to warn the reader that this is not the kind of litera-

† A. A. Sidorenko, *The Offensive*, translated and published under the auspices of the United States Air Force. (Washington: Government Printing Office, 1973, \$1.70), 228 pages. Originally published as *Nastuplenie* (Moscow, 1970).

†† *Marxism-Leninism on War and Army*, published under the auspices of the United States Air Force. (Washington: Government Printing Office, 1974, \$2.45), 335 pages. Originally translated and published by Progress Publishers, Moscow, 1972.

ture one takes to the beach to while away the idle hour. Two decades of reading Soviet military literature has convinced this reviewer that it is a hobby only for people with a distinct tendency toward masochism. Western military writing runs the gamut through the dull, the pompous, the interesting, and even the witty, but the Soviet military pundits are always their own dull and pompous selves. Having warned the reader, let me hasten to add that for those seriously interested in how the Soviet military look at conflict, both books are worth the expenditure of a little intellectual sweat.

Marxism-Leninism on War and Army is a basic text for the Soviet soldier and went through five editions between 1957 and 1968 before being put into English by the Russians. The fourteen authors who joined in bringing out the book deal with war as a sociopolitical phenomenon, the character and types of wars, the role of military power in the state, and the methodological problems of Soviet military theory, to name some of the more important topics they deal with. The book is mainly aimed at buttressing the Soviet soldier's faith in the omniscience of Marxism-Leninism as the scientific, infallible guide in all things, including war. The authors use history in a very cavalier manner, selecting examples to prove their points, but leaving out equally valid examples that would downgrade their pitch. When necessary they rewrite history by twisting the facts to suit their theory. Taken as a whole, the book is an excellent example of the Soviet art of making all data, past and present, fit the Procrustean bed of Marxist-Leninist dogma.

The authors begin with a discussion of war as a sociopolitical phenomenon and plunge right into a defense of Clausewitz's dictum, as adopted by Lenin, that war is a continuation of politics by other (i.e.,

violent) means. They point out, however, that Clausewitz saw "politics" as "foreign policy," while Lenin correctly diagnosed it as the struggle of classes, actually the "concentrated expression" of the economy, the mode of production. Every state pursues a single policy, a policy that expresses the view of the ruling class, and foreign policy in turn is determined by domestic policy. Thus Clausewitz's dictum is transformed into: "The essence of war is the continuation of the politics of definite classes and states by violent means," and the main political aims of the ruling classes assume a concentrated expression in the political aims of the war. Thus, from a Marxist-Leninist viewpoint, the central question in any analysis and evaluation of war concerns its sociopolitical nature.

The real hurdle for our authors is how to make sense of the Clausewitz-Lenin dictum in the nuclear age. They point out that the imperialists, failing to understand the interrelationship between politics and nuclear war because of their "methodological helplessness," tend either to exaggerate politics (the doves) or to extol violence (the hawks). But Marxism-Leninism enables the socialist leaders to solve the dilemma. In its essence such a war will be a continuation of the politics of classes and states by violent means; it will be a war that is a continuation of the criminal imperialist policies on one side and the lawful and just counteraction to aggression on the other side. It will resolve a "crucial historical problem, one affecting the fate of all mankind"; it will result in the crushing of not only the imperialists' armed force but also their economic, scientific, and moral-political potential; and many countries will be drawn into this coalitional world war. It will also be a very destructive conflict, and they quote from a document of the International

Meeting of Communist and Workers' Parties (1969):

Today, when nuclear bombs can reach any continent within minutes, and lay waste vast territories, a world conflict would spell the death of hundreds of millions of people, and the destruction and incineration of the treasures of world civilization and culture.

Apparently unimpressed with the description of Armageddon, our authors blandly comment: "Such a war, if it is not averted, will be disastrous for the imperialists." As they put it, the socialist system is bound to win a nuclear missile war since it is defending the "progressive ascending tendencies in social development," has all kinds of weapons at its disposal, and enjoys the support of the working people of all countries; further and most important, the logic of history and its objective laws insure the outcome. One can only marvel at such faith in the logic of history.

In the next chapter, the dice are loaded against the imperialists in the description of *just* and *unjust* wars. The political content of a war determines which category it falls into. Just wars are those fought for freedom, social progress, liberation from exploitation, or in defense of state sovereignty. "Conversely, any war *unleashed by the imperialists* with the aim of seizing foreign territories, enslaving and plundering other peoples, is an unjust war." All of which does not sound too bad, but then follows a narrower definition of just wars:

The social character of every modern war must be determined from the standpoint of the interests of the proletariat's socialist revolution and the national liberation revolutions of the oppressed peoples, from the position of the main driving forces of social progress—the world system of socialism, the international working-class movement and the people's national liberation movement.

Several pages later, the point is made that "the main decisive line of the social struggle is the struggle between socialism and imperialism," and to the non-Soviet reader the essence of the discussion seems to boil down to the shorthand rule: A just war is one favored by the Soviet Union.

The elasticity of the *just* and *unjust* war formula is well illustrated in the analysis of World War II. Between September 1939 and June 1941, not only Nazi Germany but also the Anglo-French ruling circles pursued aggressive, reactionary aims. "The war had an imperialist character on both sides." But when the Nazis invaded Russia, the conflict was immediately transformed into an antifascist, liberation war on the part of the countries of the anti-Hitlerite coalition. But even then the American-British delay in opening the second front showed the old imperialist taint—or as our authors put it, "their sluggishness, inertness, and indecisiveness."

In Chapter III, entitled "Wars in Defense of the Socialist Motherland," the description of the "socialist motherland" has an air of unreality about it; surely it cannot be a description of the Soviet Union today! According to the authors, the "bourgeois motherland," as distinct from the socialist one, knows no antagonistic contradictions and class conflicts, is characterized by the indestructible friendship of the nationalities comprising it, is permeated with "socialist patriotism" that is vastly superior to bourgeois patriotism, and is part of the socialist community distinguished by its fraternal unity and cooperation. Apparently the KGB's continuous war on dissidents, the unhappiness of several million Jews, the sullenness of the non-Russian nationalities, and the brutal use of Soviet troops to keep Hungarians and Czechs in line are all figments of the "imperialist" imagination.

Be that as it may, in wars for the defense of the socialist motherland the Soviets have a lot going for them (according to our authors): any war in defense of the socialist motherland is “unconditionally just”; is by definition a revolutionary war, thus insuring the aid of the “logic of history”; is a people’s war, another assurance of victory; and is internationalist in aim. Most of the arguments are based on the Soviet experience in World War II, which is understandable, although some interpretations are extremely dubious.

Since the war, the European socialist countries have been forced to band together in a defensive alliance (the Warsaw Pact) to combat the attempts of the imperialists to “export counter-revolution.” Furthermore, “the defense of the socialist countries is now indissoluble from the granting of comprehensive assistance to the national liberation movement of the peoples oppressed by imperialism . . .,” which seems to be quite an extension of the “defense of the gains of socialism.”

Then comes the main point of the chapter, the assertion that “While there is an aggressive imperialist camp, the Soviet state and other socialist countries must strengthen their defense capacity, maintain the battleworthiness of their armed forces at the highest level.” Furthermore, “The dialectics of modern world development are such that peace cannot be preserved if the military might of imperialism is not confronted by the superior military might of the socialist system.” The reason is that U.S. imperialism has never rejected the idea of armed struggle against socialism, and imperialism “has great military strength and is ready to use it as soon as the opportunity arises.” (My italics. KRW) If Americans were to take these statements seriously, military parity and détente would seem to be far from the Soviet mind.

If the description of the “socialist motherland” seems euphorically unreal, the description of bourgeois armies is downright funny—so far from reality that it induces more hilarity than indignation. According to our Marxist-Leninist observers, the bourgeoisie, in order to mitigate the deep contradictions between the people and the army, confine the soldiers to their barracks, resort to cruel and stupefying drill, and brainwash the personnel. Only members of the ruling class can become officers, and the relationship between them and their men is one of domination and subordination, reflecting the exploiter society. The bourgeoisie enlist young people who are unable to find a job or have not yet had time to become active in the class struggle, and in those countries where military service is not compulsory, men are hired on contract. “In the US armed forces, Special Forces, formed of emigrant scum, and the Marine Corps . . . are trained for punitive and subversive operations.”

In contrast to the bourgeois armies, “the armies of the socialist states are liberation armies; they waged and can wage only just wars. History has assigned to them the great mission of being the bulwark of socialism, democracy and peace in the whole world.” Then follow some thirty pages on why the socialist armies are morally and spiritually superior to their bourgeois counterparts, about their “noble and lofty traits.” The reason: the socialist system is superior to the bourgeois system in material and spiritual respects. Then the authors go out on a limb where most Soviet economists would hesitate to venture when they assert: “The socialist economic system secures higher growth rates of the productive forces and a higher labour productivity.”

In defining the military power of the state (Chapter VI), the authors list the

main elements of power as the economy, science, morale of the people, and the army. For some reason, the authors claim that the U.S. concept of the "Elements of National Power" (political, economic, military, and psychosocial) has only a superficial resemblance to the Soviet factors. Actually, to the bourgeois mind, untrained in the intricacies of Marxism-Leninism, they sure do look alike. It is the totality of these elements that results in the winning combination, although the military element has been more equal than the others since the advent of the nuclear weapon. In the event of a nuclear war, the nuclear stockpiles and the quantity and quality of the delivery vehicles will be of decisive importance. "Thus, the struggle for military-technical supremacy has now become decisive. . . . Mass nuclear missile strikes at the armed forces of the opponent and at his key economic and political objectives can determine the victory of one side and the defeat of the other at the very beginning of the war." As they point out in the following chapter, the revolution in military affairs, i.e., advent of nuclear warheads and strategic delivery vehicles, means that the old formula that quantitative superiority often secured victory no longer holds; now "qualitative superiority over the opponent has become a matter of prime importance."

OUR OTHER BOOK, Sidorenko's *The Offensive*, is a very different look at the Soviet military picture. The fourteen authors in *Marxism-Leninism on War and Army* cover the waterfront, ranging from revivalist exhortations on the predestined victory allotted those who put their faith in the true dogma to just what makes up the military potential of the state. Sidorenko's book is narrowly focused on what it takes in strategy, tactics, and

equipment to make the offensive successful. He has written a handbook for the general contemplating an offensive on the NATO front, and his references to Marxism-Leninism are the bare minimum necessary to keep his ideological dossier clean.

In his introduction, Colonel Sidorenko, a Doctor of Military Sciences and a faculty member of the Frunze Military Academy, makes the flat assertion that only the offensive can lead to victory. Under contemporary conditions, the launching of nuclear strikes, plus the use of tanks, motorized troops, and airborne forces, makes it possible to penetrate, encircle, and outflank the enemy with dazzling speed. The offensive has great advantages over the defense since it enables the attacker to launch his nuclear weapons in surprise strikes, to prepare his forces ahead of time, and to select the point or points to be attacked. Although the defense does have something to be said for it and should be studied intently, nevertheless, victory unquestionably belongs to the offensive. He then spills the obligatory wine to the ideological lares and penates by quoting Lenin and Frunze on the offensive as the only path to victory.

The American editor comments on the fact that the publication of the book and Sidorenko's attainment of his doctorate were near enough together to make it reasonable to assume that the book was based on his dissertation. Certainly the first chapter, devoted to the development of the offensive prior to nuclear weapons, has all the earmarks of the "historical introduction" so dear to the writers of doctoral theses. Nevertheless, Sidorenko, in about 38 pages, summarizes the main developments of the offensive over the last century, and he does an excellent job of it. Using statistics copiously, he demonstrates the increased role of firepower, weight of metal delivered per division, the

widening and deepening of the offensive, the increased speed of advance, especially in World War II, the use of airborne troops to get behind the forward defense, the perfection of the breakthrough and subsequent encirclement, especially on the Russian front in the Great Patriotic War, and the evolution of command and control techniques to cope with the greater mobility of units dispersed over much wider fronts. Most of his data are derived from the Soviet experience in World War II—he is almost parochial in this respect. Furthermore, he has little to say about the role of air power, and what he does say is restricted to close support and reconnaissance. Strategic bombing is left out of the picture, probably because he does confine himself largely to the Soviet experience in World War II.

In Chapter II Sidorenko gets into the nitty-gritty of the book, the offensive in the nuclear age. He sees the nuclear weapon as changing the very content of the offensive, or as a Marxist might put it, the magnitude of the quantitative change in firepower transforms it into a qualitative change. Nuclear weapons are not restricted to the "support" of motorized rifle and tank units but can be used to destroy the enemy independently. They are weapons of "area" destruction. Modern combat is nuclear combat, and the actions of the troops on the battlefield must be coordinated with the nuclear strikes and used to exploit their results. The introduction of nuclear weapons has also changed the defense in that combat units have to be widely dispersed to avoid catastrophic losses. The main delivery vehicles for nuclear weapons are missiles, both tactical and strategic, and the missile troops are the elite force of the nuclear battlefield. Missiles have range, speed, controllability, invulnerability in flight, sufficiently high accuracy, and independence

of meteorological conditions. The use of missiles will give the attacking troops the opportunity to carry out breakthroughs at operational depth, especially airborne troops.

The role of the tank on the nuclear battlefield is extolled by Sidorenko. The increased mobility, range, and firepower of modern tanks, plus their relative invulnerability to the effects of nuclear weapons, make them the main shock force of the ground forces. However, he admits that antitank weapons, especially antitank guided missiles, do tend to sour the picture somewhat. But his enthusiasm for the offensive overcomes that minor detriment to his beloved tanks.

The increased speed, altitude, and range of modern jet aircraft, married to the nuclear and other new types of armament, enable modern frontal aviation to support combat actions of attacking troops. Modern aviation can launch powerful strikes at greater depth under the most varied weather conditions. An important asset of aviation is its capability to search and destroy.

Another qualitative leap in the development of the ground forces is their complete motorization, thus enabling them to exploit breakthroughs with great speed. The use of armored personnel carriers (APC's) permits such exploitation right after nuclear bursts.

Sidorenko then goes on to discuss the possible character of the NATO defense against the offensive. He sees NATO as wedded to the mass employment of nuclear weapons and the subsequent launching of counteroffensives once the attacker's thrust is blunted. The dispersion of NATO troops frontally and in depth is the best method of protecting them against nuclear weapons, but of course there are limits to how widely forces can be dispersed and still be effective. The

NATO forces are also being equipped and trained in antitank defense to offset the increased role of tanks in the offensive.

Sidorenko waxes eloquent when describing the characteristic features of the offensive in a nuclear environment. The primary method of attack will be the launching of nuclear strikes, followed immediately by the swift advance of tank and motorized rifle units deep into the enemy's defense through the breaches opened up by the nuclear strikes. The old clearly defined front lines will be so lacking that he thinks one should now speak of the "line of combat contact of troops." Combat operations will be conducted in "the presence of vast zones of contamination, destruction, fires, and floods." Even the term "breakthrough" is obsolete; it is now more correct to talk about "overcoming" the defense with great speed immediately after the nuclear strikes, overcoming the defense through the exploitation of intervals, gaps, breaches, and open flanks.

In Chapter III, Sidorenko discusses the combat missions of the various types of units, the width of the attack for various-sized formations, the axis of the attack, and deployment on the nuclear battlefield in general. Much of the discussion is a repetition of the material covered in the previous chapter, although in this chapter he goes into much more detail about the optimal sizes of units, the ideal spacing of APC's and tanks during the advance, and the role of the Soviet antiaircraft defense (PVO) in protecting the troops from the aviation of the capitalist countries. The chapter is for all intents and purposes a manual for a ground offensive against NATO, and the role of strategic weapon systems (ICBM's, long-range aircraft, and SLBM's) is ignored. Sidorenko seems to be rehashing the Soviet offensive against Nazi Germany in the 1944-45 period, only the

scenario now includes nuclear weapons—largely tactical.

The unwary reader, upon seeing the juicy title for Chapter IV, "The Employment of Nuclear Weapons and Destruction of the Enemy by Fire," may feel that he is going to get the real lowdown on Soviet nuclear strategy. But, alas, a little footnote on the first page informs the reader that the chapter is based on data derived from the foreign press, i.e., the capitalist press. The chapter, in short, is a dissertation on the capabilities and employment of Little Johns, Honest Johns, Lances, and Sergeants, but nary a word about Soviet weaponry. For once, however, Sidorenko does allot a major role to air power, as can be seen from the following extract:

The most effective battle with enemy nuclear missile weapons can be conducted by fighter-bomber aviation employing the independent search and destruction of targets which have been discovered, that is, the "hunting" method.

THE NEXT CHAPTERS, V and VI, are concerned with the defeat of the defending enemy through the exploitation of breakthroughs and the subsequent pursuit of the shattered enemy forces. The author has a great deal to say about speed, attacking from the march, the use of tanks and APC's, and the role of artillery and nuclear missiles—much of the material very similar to that presented in the previous chapters. He again doffs his cap in the direction of air power, pointing out that aviation is always in a "high state of readiness," can cope with small and rapidly moving targets, and is the main means of reconnaissance. It also has an important part to play in pursuit, especially in creating bottlenecks at bridges, road junctions,

and various types of defiles. One of the major problems in pursuit is the crossing of radioactive contaminated zones. Sidorenko advocates sending in tanks first, because they are the most invulnerable to the effects of radiation, and only then sending the motorized rifle units across in APC's; the personnel in the APC's will have to wear gas masks and protective capes. If the contaminated zones are dusty, the vehicles will have to be widely separated because of their tendency to kick up dust clouds, which can be extremely dangerous.

The last two chapters, VII and VIII, are devoted respectively to forcing water barriers and to night attacks. Unlike in past wars, when water barriers were of great importance for the defense, the "rapid development of science and technology provides a basis to assume that in the future water barriers will not be serious obstacles for attacking troops." There are now various means of coping with these barriers: tracked self-propelled ferries, portable pontoon bridges, and amphibious tanks, trucks, and APC's. The author assumes that the role and importance of combat operations at night will increase sharply in contemporary nuclear war, since night operations facilitate surprise, so important in paralyzing and demoralizing the defenders. In Chapter VIII, he describes in great detail various methods of conducting such night attacks.

Sidorenko, like most Soviet military theorists, is extremely repetitive, almost to the point of being sleep-inducing. If, however, the dubious adage that repetition is the essence of effective pedagogy has any validity, then *The Offensive* is a masterpiece. The commander of a Soviet tank or motorized rifle unit, if he reads Sidorenko's book, will learn just how to position his unit, how wide a front he should cover, how deeply his unit should be echeloned, and what to do under

almost any set of conditions on the nuclear battlefield. He is not only told these things but is told them over and over again.

Sidorenko, although nodding in the direction of air power, is mainly concerned with the role of the tank and motorized rifle units of the Soviet armed forces. His book demonstrates the enormous influence of the Great Patriotic War on Soviet military thinking or, in a broader context, the national fixation on the events of the 1941-45 period. *The Offensive* is in many respects the Great Patriotic War replayed in a nuclear environment, but with the nukes restricted to the battlefield. The scenario played out in his book is an offensive against the NATO forces in Western Europe. In this regard the book should be a valuable addition to the library of NATO commanders, if for no other reason than as an example of how their defenses are evaluated by a highly respected Soviet military theorist.

At no time does Sidorenko discuss the wider aspects of a Soviet-NATO conflict such as, for example, the effect on the Soviet reserves and logistics of large nuclear weapons delivered by long-range missiles or strategic aircraft. His scenario is a predominantly ground war in Europe. How applicable his strategy and tactics would be against the Chinese People's Liberation Army (PLA), given the enormous areas involved in such a conflict, is questionable but apparently of no concern to him. That, it would seem, is some other strategist's bailiwick.

Another interesting point is the assumption that in a conflict with NATO the Soviet forces would be on the offensive from the very beginning. Sidorenko never discusses a NATO offensive except as a "counteroffensive" if the NATO nuclear strikes were to blunt or shatter the Soviet offensive. This may be a little unfair to the author

since his subject is the offensive and not the defensive, and it may be that he is leaving the discussion of the defensive to other colleagues. On the other hand, his dithyramb in praise of the offensive in his introduction would lead the reader to conclude that the defensive has a low priority in Soviet military thinking.

THE first two books in the Soviet Military Thought series give the reader a glimpse of the whole spectrum of Soviet military

thinking, from the *Weltanschauung* encompassed in *Marxism-Leninism on War and Army* to Sidorenko's detailed description of what a Soviet offensive should be like. Both books are worthy of the attention of anyone curious about how Soviet military theorists look at conflict and are to be recommended especially for those who are students of Soviet military thought. They are well worth the intellectual grind needed to plough through them.

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A THREE-VOLUME AVIATION LIBRARY

LIEUTENANT COLONEL KNUTE F. LAWSON

A SERIES of current, modestly priced aviation books by the renowned aircraft writer and editor John W. R. Taylor is now appearing on the shelves of better book stores. Mr. Taylor is best known as the editor and compiler of the standard reference text *Jane's All the World's Aircraft* and also as author of hundreds of books and articles concerning the history of military and commercial aviation. His latest works, prepared with other noted writers and editors, include a pair of excellent recognition guides of current military and commercial aircraft and an outstanding almanac of aviation facts and feats that would rival the *Guinness Book of World Records* in the field of aviation.

What's that plane?

The publication of aircraft recognition

manuals or books appears to be a thing of the past in this day of Mach 2 aircraft cruising at altitudes in excess of 60,000 feet. There also seems to be a lack of interest in manuals providing three-view drawings or photographs of modern military or civilian aircraft. If the reader has served in World War II or Korea, he may remember, with nostalgia, the manuals and pamphlets prepared during those periods concerning aircraft recognition. Spotter's guides for the identification of friend or foe formerly included War Department FM 30-30, *Recognition Pictorial Manual*, *Aeronautics Aircraft Spotter's Handbook*, and ADC Manual 200-3, *Aircraft Recognition Silhouettes*. These publications provided either three-view line drawings or black silhouettes and the basic information necessary to identify the aircraft. The more sophisticated manuals, such as FM

30-30, provided one to four photographs of the aircraft, which were usually incorrect because of a lack of accurate intelligence. The more current publications such as AFM 50-13, *Recognition Guide Sino-Soviet Aircraft* (1964), contained only photographs with a minimum of performance data.

Until now, a first-class pocket guide for recognition of military or commercial aircraft was difficult or almost impossible to find either through the Government Printing Office or commercial publishers. To obtain information on present-day aircraft required research in the library. The best reference publication was *Jane's All the World's Aircraft*. This excellent reference text is both voluminous and expensive; thus, the average aircraft enthusiast could normally not afford a personal copy.

Now the aircraft researcher can obtain a book with a good percentage of the detail in *Jane's* at a modest price.† The Macmillan Company published in May 1974 a pair of pocket-size books that provide the data necessary for identification as well as for research. These handy texts, which measure $3/4 \times 4\frac{1}{2} \times 7\frac{1}{2}$ inches, are titled *Jane's Pocket Book of Major Combat Aircraft* and *Jane's Pocket Book of Commercial Transport Aircraft*. Both books are edited by Mr. Taylor with the able support of Kenneth Munson and Michael J. H. Taylor. Since the books were published so recently, they contain the most current data on aircraft in the world's inventories.

The first book, *Jane's Pocket Book of Major Combat Aircraft*, contains photographs, three-view drawings, and details on 249 current military aircraft. The

format for both texts is a photograph on the left page and a three-view drawing and details on the right. The aircraft are listed in alphabetical order, with a simplified index for quick reference. The information presented on most aircraft is quite detailed considering the size of the text; for example, the aircraft manufacturer, type, and original country of development are given with the popular designation. A bit of detail normally not included in such compact publications is the date of the first flight. Information regarding the various models and designations, power plant(s), wing span and length, maximum take-off weight, speed, rate of climb, service ceiling, combat radius, and armament is also included. An interesting bit of additional information relates which nations have ordered the aircraft and how many, by type. Aircraft as old as the DeHavilland Vampire (1943) and as new as the Northrop YF-17 (1974) are depicted. The data on aircraft as current as the F-15 are mostly approximations because of classification.

If, for example, the reader is interested in the performance data and variations of the French Mirage III and the number ordered by Venezuela, this is a handy text to provide the information.

The companion book, *Jane's Pocket Book of Commercial Transport Aircraft*, is prepared in the same format and provides the equivalent data as its military counterpart. This is an excellent guide to the commercial carriers of the world and the number produced since their initial development. An example is the commercial version of the C-130 Hercules, which is a Lockheed L-100; 27 of this type aircraft have been

† John W. R. Taylor, editor, *Jane's Pocket Book of Major Combat Aircraft and Jane's Pocket Book of Commercial Transport Aircraft* (New York: Macmillan Publishing Company, 1974, each \$6.95 hardcover, \$3.95 paperback), 263 pages each.

manufactured since 1965. Of the 226 aircraft listed, the oldest is the Ford Trimotor/Bushmaster 2000 (1926—modified 1966), and the most current is the Air Bus A-300B (1972). An item of interest to most civilian and military aviators is that 12,926 DC-3/C-47 aircraft were constructed from 1935 and that approximately 800 are still in commercial service as of 1974.

As related, these two pocket guides to modern aircraft are excellent, inexpensive source documents for the aviation enthusiast. What's that plane? If you are not certain, these are excellent publications to consult.

aviation facts, figures, and photographs

If the reader is having difficulty finding the answer to such a question as "Who was the first certified woman aircraft pilot and the date she obtained her license?" he will not have to research any further than *Air Facts and Feats*.† The second edition of this aviation almanac, prepared by Guinness Superlatives Limited, is a virtual storehouse of knowledge concerning important achievements in aviation history. It traces the history of flight from ancient Egypt to the present day in considerable detail.

If you are still wondering about the answer to the question posed earlier, it is Mme La Baronne de Laroche in March 1910. Unfortunately, the pioneer aviatrix died in an aircraft accident in 1919. This is just one of the thousands of facts contained in this compact text of 288 pages. It also contains over 200 photographs, maps, and sixteen pages of color

plates depicting famous civilian and military aircraft from 1903 to 1972. The aircraft drawings are presented in profile and in their original color schemes. The plates for the First and Second World Wars depict aircraft flown by outstanding airmen in the livery of the period. These drawings are excellent references for the aircraft modeler when finishing replicas.

To provide ease in locating aviation facts, the text is divided into nine major sections. Section 1, "Pioneers of the Air," is a capsule history of aviation from ancient Egypt to 1913. It provides facts relating to the first flights and early international aviation meets. Section 2, the largest in the text, concerns military aviation from 1908 until the present. The early history of army aviation and eventual development of army organizations into separate service departments in such nations as the United States, Great Britain, and Germany are included. Detailed sketches of the great aces of both World Wars, with color profiles of their aircraft, are a highlight of this section. A concise list of the victories of famous pilots of both wars is an excellent source of information for the military aviation enthusiast. The section ends with a description of the origins of the world's air forces. Section 3 is a companion text to the previous section since it concerns the history of maritime aviation from 1910 until 1972. The list of aircraft carriers developed between the wars and the first flights of principal naval aircraft, supported by many excellent photographs, provides the reader with a concise history of the air war at sea.

Sections 4 through 8 depict the development of commercial aviation and space

† John W. R. Taylor, Michael J. H. Taylor, and David Mondey, editors, *Air Facts and Feats* (New York: Two Continents Publishing Group, 1974, \$8.95), 288 pages.

flight. Section 4 reviews the development of commercial aviation from early feats such as Lindbergh's crossing the Atlantic to a series of firsts regarding the development of the world's air routes. A portion of this section is also devoted to world point-to-point speed records and crime in the sky. The history of lighter-than-air flights is presented in Section 5, which covers a span of aviation feats in this environment from 1783 with the hot-air balloon through the rigid airship of the 1930s. An interesting listing, in detail, is the James Gordon Bennett International Balloon Race trophy winners (1906-1938). Section 6 covers the development of the autogiro and helicopter. A concise description of achievements in sports and competition flying is provided in Section 7. This section also contains descriptions of early parachute records, development of the ejection seat, and a history of aerobatic maneuvers.

Section 9, the last section, describes the history of solid- and liquid-fueled rockets, ballistic missiles, and rocket aircraft and provides an excellent chronology of man in space from 1961 to 1973.

The book concludes with an appendix of facts that were possibly too late to be included in the basic sections. These facts include a chronological list of world absolute speeds obtained by man in the atmosphere from 1906 through 1967. In approximately sixty years, man has progressed from 25.65 to 4534 mph. The remaining two appendices are devoted to the development of four remarkable aircraft: the Boeing 747, Harrier, Concorde, and Tu-144; and a list of aviation's worst disasters from the loss of 62 personnel

when the airship R-38 was destroyed in 1921 to the crash of a Vanguard in 1973 with 105 fatalities. An excellent bibliography is also included for those interested in additional research. In order to provide ease in cross-referencing aviation facts, an excellent index is included at the end of the book.

In conclusion, this compact publication is a true almanac of aviation facts and feats. As stated by the publisher, "the book contains everything you've always wanted to know about aircraft but were afraid it would take ten volumes to find out!" If one could digest all the information provided and if the "64 Thousand Dollar Question" were still on television, he would be a likely candidate for the grand prize in aviation history.

THESE modestly priced and detailed publications would certainly be an asset to the student of aviation history or to one who prides himself in his ability to recognize current military and commercial aircraft. They would also be of value to a reader who has only a moderate interest in the subject. The books have been prepared by one of the world's true aviation experts, John W. R. Taylor, with the aid of distinguished editors and writers in this field. These three texts provide the detail that would ordinarily comprise many volumes of expensive aviation material in the reference collection at the local library.

The next time you are browsing through a book store or library, stop by the aviation section and review these texts. You will be amazed at the wealth of information available in these three compact compendiums of aviation.

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The Contributors



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AWARD

The Air University Review Awards Committee has selected "The Hanoi POL Strike" by Colonel James H. Kasler, USAF, as the outstanding article in the November-December 1974 issue of *Air University Review*.

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