AIR UNIVERSITY REVIEW

Thud Strike

MAY-JUNE 1969

UNITED STATES AIR FORCE AIR UNIVERSITY REVIEW

AIR UNIVERSITY
REVIEW

THE PROFESSIONAL JOURNAL OF THE UNITED STATES AIR FORCE

Address manuscripts to: Editor, *Air University Review*, Aerospace Studies Institute, Maxwell Air Force Base, Ala. 36112. Printed by Government Printing Office, Washington, D.C. Subscriptions are sold by Air University Book Department, Maxwell Air Force Base, Ala. 36112: yearly $4.50, back issues 75 cents. USAF RECURRING PUBLICATION 50-2.

Vol. XX No. 4 MAY-JUNE 1969

the cover

The role of air power in Vietnam is undergoing exhaustive evaluation to reach the right conclusions as to its use in future limited war. We early learned that before targets could be reached the enemy's anti-aircraft guns and missiles had to be suppressed. One of the aircraft that assisted in the task is the F-105 Thunderchief, commonly called the "Thud" by our airmen who fly and service it in Southeast Asia.

AIR POWER IN LIMITED WAR

Dr. Harold Brown

At 8 a.m. on Friday, November 1, 1968, Washington time, the United States ended the bombing of North Vietnam. This measure was taken after we had reason to believe that the demilitarized zone would not be abused and attacks would not be launched against the major cities of South Vietnam. More important, we stopped the bombing as a step toward a mutual de-escalation of the war and toward the advancement of peace talks in which the government of South Vietnam could participate. It was clear in this critical negotiation, as it has been before, that air power was one of our principal bargaining counters; it can quickly be turned up, down, or off.

Although the events of Vietnam are still close upon us, it is not too early to reflect on the contributions of air power in that conflict. We should evaluate the assertions of the critics (who look at the war from various points of view): that the use of aircraft against

guerrilla units is like swatting gnats with a sledgehammer, that air attack kills more friendly troops and civilians than it does enemy soldiers, that strategic bombing could have ended the war promptly if we had just struck the right targets, that interdiction attacks against enemy transportation have failed to achieve their objective. Most important, it should be possible to reach some tentative conclusions about how air power can help us fight any future limited war. We must judge what sort of air power we need to maintain, what we should and should not expect it to accomplish, and what kinds of operations should be authorized. My own evaluation leads me to the following major conclusions:

1. Air power has played a major role in defeating guerrilla warfare tactics through highly responsive firepower and airlift.

2. Strike aircraft are capable of very detailed discrimination between friend and foe.

3. The need to keep war limited in the nuclear age may often prevent the use of strategic bombing against the sources of supply.

4. Even when the sources of supply are not attacked, air interdiction of supply lines can destroy, disrupt, and delay the enemy's resupply and replacements, forcing him to adjust his level of combat to fit his uncertain logistics and insuring his defeat in any attempted sustained combat.

5. Interdiction can also place a severe strain on the

enemy's economy, manpower supply, and political control system. This raises the cost of the war and makes a negotiated peace seem more desirable. But there is no one best level of interdiction. Our national leaders must weigh the probable effect on ground combat, the political effect on the enemy government, and the risk of expanded war.

6. Our Air Force requires—and is developing—new types of equipment and munitions for maximum effectiveness in limited war.

7. We must not gear our future planning too narrowly to our experience in Vietnam.

Without Air Power We Would Have Lost in Vietnam

In 1964 Communist leaders in Hanoi launched the final phase of a campaign they had been working toward for many years. They had organized and trained Viet Cong units from platoon size to entire regiments and were sending in individual soldiers and whole battalions of the regular North Vietnamese army. At this point, the U.S. had no combat units in operation in Vietnam; we had only some 20,000 advisers with South Vietnamese forces. As the situation deteriorated in early 1965, the United States began air support operations to buy time for South Vietnam. We used A-1 propeller-driven attack aircraft and F-100 fighter-bombers to break up attacks by enemy battalions and regiments. We also began air strikes against military installations and supply routes in North Vietnam in an effort to disrupt the flow of men and supplies. From its initial use, air power has allowed the U.S. to neutralize many of the advantages that the enemy gained from guerrilla warfare and jungle concealment. I judge that without it we could not have prevented South Vietnam from being overrun.

In an area of the world largely devoid of all but the simplest roads and trails, air power permitted Allied units to combat effectively the small but widespread enemy attacks on isolated camps and villages. Our ability to concentrate overwhelming firepower has allowed us to expend ammunition rather than additional lives.

The value of air support was dramatically shown during the Pleiku Campaign of late 1965. This series of battles was triggered by the Communist attack on the small Special Forces camp at Plei Me, close to both Cambodia and the Ia Drang River, which serves as a highway to Vietnam's vital central highlands. The camp came under attack by a multibattalion force of Viet Cong guerrillas on the night of October 19. As the Viet Cong attempted to storm Plei Me, C-123 and C-47 transports dropped the first of thousands of flares, and fighter-bombers dove in to strike targets as close as 300 feet from the perimeter. Day after day the Viet Cong regrouped, and day after day they were dispersed by air attack. Our airmen brought in reinforcements to assist the besieged garrison. Finally, when the enemy attempted to retreat to his sanctuaries in the west, U.S. units began an immediate, relentless pursuit, relying primarily on aircraft—including everything from Army helicopters to Strategic Air Command B-52s.

As the combat spilled over from Plei Me to fierce engagements in the Ia Drang Valley, logistical aircraft eliminated "middleman" strips and flew supplies directly into the forward support locations. When necessary, fighter-bombers stayed on continuous air alert over the tactical area.

In that same campaign we first used heavy bombers to increase the tactical firepower brought to bear against the enemy. Enemy forces had entrenched themselves in a formidable system of bunkers which were overlaid with a resistant, triple-tiered jungle canopy. Because an extremely heavy volume of fire was necessary to destroy these targets, our commanders decided to use B-52s carrying fifty-one 750-pound general-purpose bombs in each aircraft (a number since increased). These weapons penetrated the jungle canopy and released sufficient explosive force to destroy the bunker and trench system, even without scoring direct hits.

Today ground commanders can coordinate B-52 strikes with rapidly maneuvering ground forces. B-52s, already airborne, can

be diverted from their preplanned targets to strike enemy concentrations as they are discovered.

The Pleiku Campaign became a model for air-ground cooperation in the years to follow. A U.S. Army officer described our air support of South Vietnamese Regional Force units and U.S. Special Forces at Loc Ninh in 1967 as follows:

> If it hadn't been for air, we would have lost this place. The air chopped them up at the wires. My men had about 30 rounds of ammunition left per man when the attackers were driven off, never having broken the perimeter. They came right down our perimeter with cannon, antipersonnel mines, and then when the enemy began pulling back, they hit them with high explosive stuff.

Perhaps the most decisive battle occurred slightly more than two years later, when the North Vietnamese massed their largest concentration of forces in the war around still another camp. This time it was Khe Sanh.* In that memorable confrontation the opposing ground elements stood in clear imbalance: 20,000 North Vietnamese regulars besieged 6000 U.S. Marines and South Vietnamese rangers. Despite those odds, however, there was no repeat of Dien Bien Phu.

Allied aircrews flew water, food, and ammunition to the ground forces. Airlift delivered a daily average of 150 tons of cargo to Khe Sanh. Had the outpost been approachable from the ground, this movement alone would have required a 60-truck convoy each day.

To complement this essentially defensive airlift effort, the U.S. brought in other forces. Our reconnaissance aircraft used sophisticated sensors to uncover enemy movements, while forward air controllers visually searched the ground. Allied strike and bomber aircraft hit at the North Vietnamese with more than 100,000 tons of bombs and 700,000 rounds of cannon and machine-gun fire during the siege. Ground-based radar controllers directed B-52s along precise bombing tracks and told them when to release their bombs. As the enemy moved closer to the perimeter of the outpost, so did the bombing.

Finally, the unceasing pressure forced General Giap, the North Vietnamese Defense Minister and architect of the campaign, to withdraw his troops. Prisoners estimated that over 75 percent of some enemy units were killed, and we counted nearly 1300 enemy dead left behind on the battlefield on just one sweep. Of the enemy, General William C. Westmoreland said: "His back was broken by air power."

U.S. air strikes have been unprecedentedly responsive and precisely controlled everywhere in the Southeast Asia combat area. Discrimination between friend and foe, combatant and civilian, has been manyfold better than in any previous war. In South Vietnam there have been very few casualties to friendly forces or to the civilian population. Early in the war there was a problem in distinguishing enemy base camps from peasant villages, but this was solved by careful evaluation of each target area by both the local Vietnamese and American intelligence. Even in the case of known enemy base camps, warnings were given to permit the evacuation of the civilian population. And fortunately, most enemy units were based in heavy jungle areas where there was no civil population. So the truth is that most of the civilian casualties have been inflicted on the populace by the enemy, who seems to believe that terror attacks on civilians will help him win the war.

The consensus in both Allied reports and captured enemy documents is that the responsiveness of air power, together with its ability to concentrate firepower, has taken the initiative from the enemy, denied him freedom of movement, and kept him from grouping for attack.

The Question of Strategic Bombing

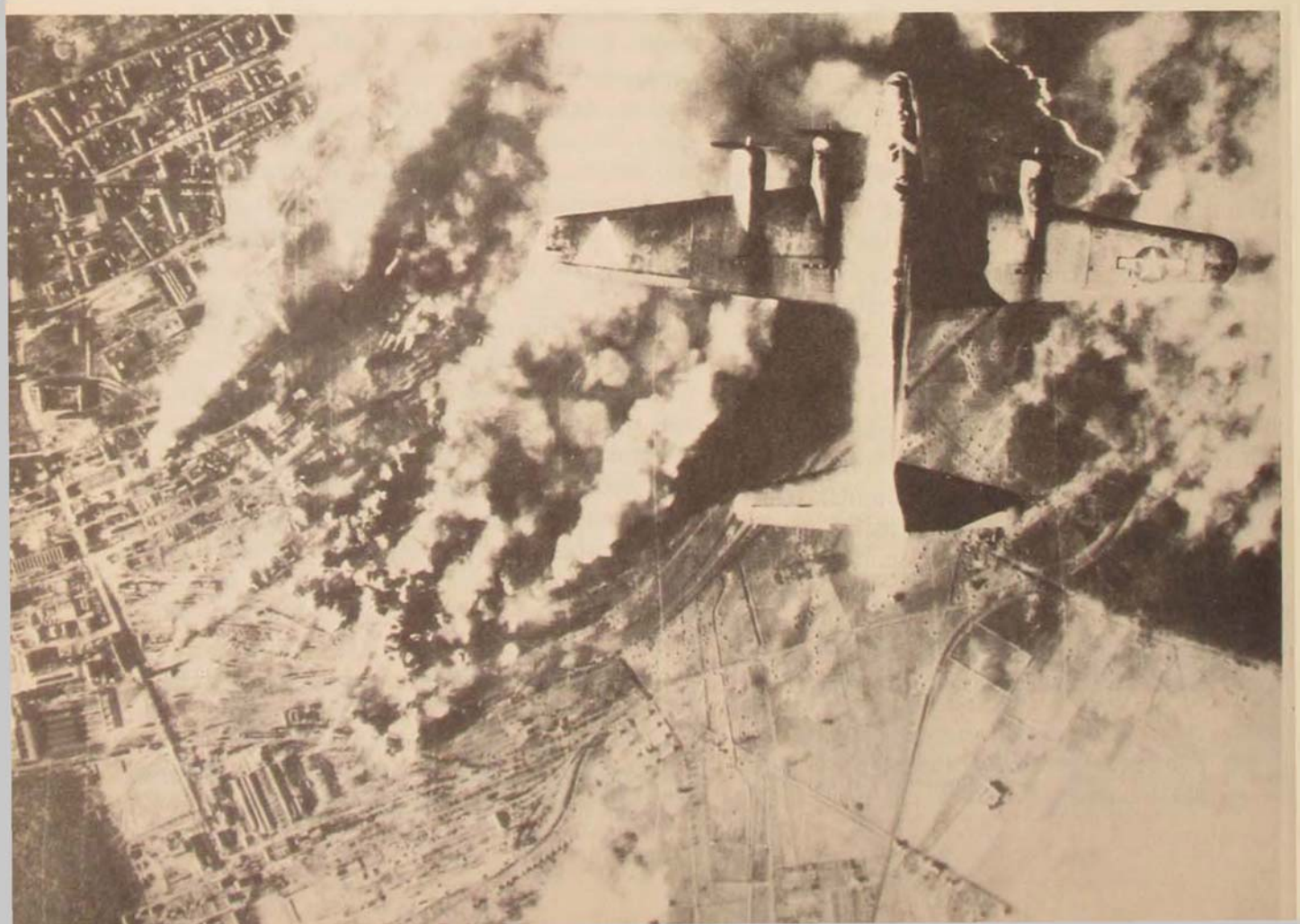
Ironically, our success in Vietnam has been denigrated by critics who make a nega-

*See "Khe Sanh: Keeping an Outpost Alive" by Major General Burl W. McLaughlin in *Air University Review*, XX, 1 (November-December 1968), 57–77.

tive comparison with the results of strategic bombing in World War II. And the temptation to make such negative comparisons is not hard to understand. World War II clearly proved that properly conducted strategic bombing can end a war by destroying the source of the enemy's strength, but World War II was quite a different kind of war from the present conflict in Southeast Asia.

In 1944 President Roosevelt commissioned the much-quoted (and often misquoted) Strategic Bombing Survey, a careful analysis of bombing results by hundreds of highly qualified military and civilian personnel. What the Survey concluded is perhaps not generally realized, even by those who refer to it in commenting on air power. With respect to Germany, it found Allied air power to be ". . . decisive in the war in western Europe." Air power won the battle in the air, assisted in the elimination of the U-boat threat, helped turn the tide overwhelmingly in favor of Allied ground forces, and brought the German economy to virtual collapse. "The German experience suggests that even a first-class military power—rugged and resilient as Germany was—cannot live long under full-scale and free exploitation of air weapons over the heart of her territory." In Japan, the findings showed that even before the atomic bomb was employed, "one of the important factors inducing Japan's leaders to accept unconditional surrender was a realization that the Japanese armed forces had lost their ability to protect the people and that under the impact of direct air attack . . . their confidence in victory and determination to continue the war were rapidly declining."

But it was not the bombing of population centers that led to decisive results. City bomb-

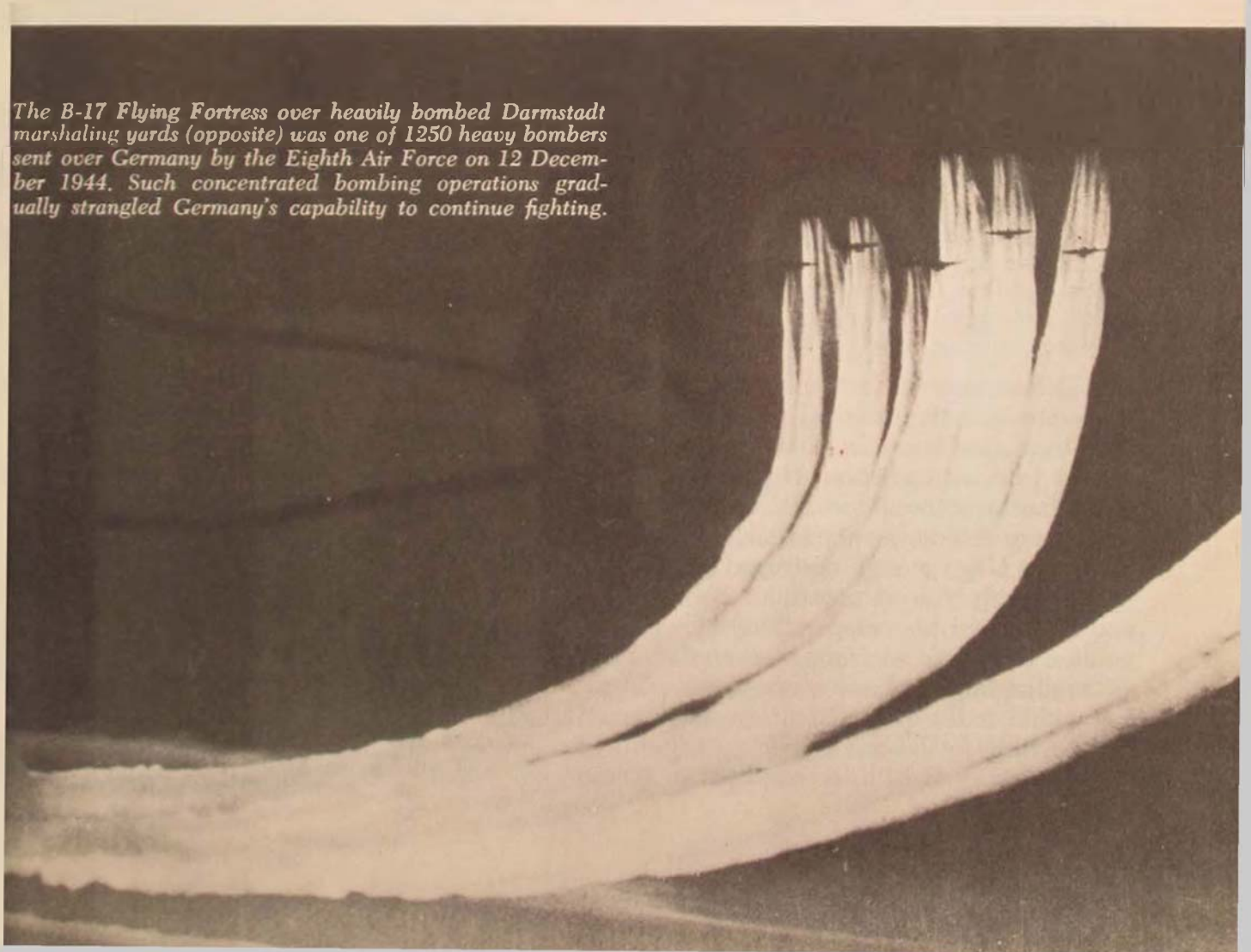


ing did not seem to affect the war effort greatly, whether because of the patriotism and heroism of the people—as was certainly the case in the London blitz—or because of police-state controls, or a combination of the two. The Survey found that:

> Under ruthless Nazi control [the people] showed surprising resistance to the terror and hardships of repeated air attack, to the destruction of their homes and belongings, and to the conditions under which they were reduced to live. Their morale . . . declined, but they continued to work efficiently as long as the physical means of production remained. The power of a police state over its people cannot be underestimated.

Against Japan, population attacks may have had a greater effect on morale. Sixty-four percent of the people indicated that prior to surrender they had reached a point where they felt personally unable to go on with the war. But the Survey found that until the end of World War II "national traditions of obedience and conformity, reinforced by police organization, remained effective in controlling the behavior of the population."

Even in that all-out war, the Survey concluded that to destroy the enemy capability to continue the war required not general attacks on cities but "sustained and accurate attack against *carefully selected* targets." (Italics mine.) Even general attacks against munitions factories were disappointing. Air operations became decisive only when concentrated against certain vulnerable basic industries, especially oil production and the transportation network. (The contrast with North Vietnam, which has none of the former and comparatively much less need for the latter, is obvious.) During 1944, production of aviation



The B-17 Flying Fortress over heavily bombed Darmstadt marshaling yards (opposite) was one of 1250 heavy bombers sent over Germany by the Eighth Air Force on 12 December 1944. Such concentrated bombing operations gradually strangled Germany's capability to continue fighting.

fuel in Germany and its occupied territories dropped 85 percent and motor fuel some 75 percent. With the shortage of aviation fuel, the enemy was forced to leave combat aircraft sitting on the ground and was unable to train replacement pilots. Attacks against railroads could not prevent military movements but began to strangle the economy by the end of 1944. Coal deliveries dropped to one-third of minimum industrial requirements and were often insufficient to provide even the fuel needed for locomotives. Thus, although many munitions factories remained intact and total production continued to increase until the end of 1944, quite suddenly their products could not be delivered and their production lines could not continue in operation.

The Survey concluded that "even if the final military victories that carried the Allied armies across the Rhine and Oder Rivers had not taken place . . . the indications are convincing that the German armies, completely bereft of ammunition and motive power, would have had to cease fighting within a few months."

In Japan, and again I quote the Survey:

> We underestimated the ability of our air attack on her home islands, coupled as it was with blockade and previous military defeats, to achieve unconditional surrender without invasion. By July 1945, [though] the weight of our air attack had as yet reached only a fraction of its planned proportion, Japan's industrial potential had been fatally reduced . . . and her leaders, convinced of the inevitability of defeat, were preparing to accept surrender.

The memory of the German and Japanese economies grinding to a halt left some people with the naïve hope that bombing would be able to terminate any war. However, this sort of optimism ignored the realities of today's weapons and today's political alignments. For the *Enola Gay* not only destroyed Hiroshima; it irrevocably forced constraint upon might and underlined the inseparability of war and politics. In today's nuclear age, even the smallest conflict involving one of the major powers has within it the potential threat of a larger and possibly total war.

Since we sought to accomplish our objectives in South Vietnam through a limited rather than a world war, air power could not play the same role it played in World War II. The source of enemy munitions was not North Vietnam but the Soviet Union and Communist China, both outside the war zone.

In Vietnam, there was no sophisticated industrial system. There were no transportation jugulars, such as oil refineries, whose destruction would immobilize the North Vietnamese economy. There was no complex mechanized military force awaiting vast amounts of supplies at the far end of an intricate logistical network.

In North Vietnam itself, factories accounted for only 10 percent of the gross national product. There was only one steel plant and one cement plant (both were badly damaged by air strikes). There were fewer than a dozen power plants, which collectively generated less power than is used by a U.S. city of some 200,000 people (and most of these plants were badly damaged by air strikes). Since there was little industry, a small number of trains, together with limited truck and barge traffic, could handle essential transportation requirements—as opposed to the thousands of trains needed by our enemies in World War II.

Our purpose in initiating the bombing of North Vietnam was not to destroy a primitive country but to make its leaders realize that the costs of aggression were high. This could not be strategic bombing, since most of the strategic targets were not in Vietnam. We took as our objective neither total victory nor foreign conquest. We rejected a Munich, but sought less than the unconditional surrender of World War II. All we sought was to stop the forward pressure of an aggressive movement and allow the South Vietnamese to select their own government. And in this respect it may be said we have largely achieved our goal. External aggression *has been* blocked in Vietnam, and the South Vietnamese now have before them the opportunity to forge a viable nation, a task which only they can do for themselves. The 250 million people in Southeast Asia surely recognize these facts, as do the 150 million in South Korea, Japan, and

Taiwan. Their chances of being dominated by China are much less today as a result of our stand in Vietnam.

The Role of Air Interdiction

With the industrial support of North Vietnam coming from abroad, many of the lessons learned from the World War II Bombing Survey were inapplicable. The situation more closely resembles the Korean War. There, too, we fought a limited war where the main sources of supply were outside the zone of conflict. There, too, we could not fully apply air power against production centers and supporting industries because they were not in North Korea at all. Instead, we could only try to block the movement of supplies by interdicting them.

In Korea, we found that interdiction could reduce the enemy's supply levels and limit his military operations. Under the circumstances then prevailing, however, we were unable to end that war by cutting off supplies, even though the enemy used a conventional army with large ammunition requirements and even though there were no restrictions on bombing within the limits of North Korea. We learned that supplies for a stabilized front could be moved on the backs of men if necessary. But bombing inflicted heavy costs on such operations and helped influence the enemy to accept a reasonable peace.

In the present war, no responsible U.S. government official has ever suggested that the flow of supplies from North Vietnam could be restricted to the point that the enemy would not be able to continue guerrilla warfare. Since enemy forces could continue this sort of warfare by fighting only an average of two or three days a month, they would need a total of only some 100 tons per day of externally supplied food, weapons, and ammunition, compared to the 3200 tons per day used by the Chinese and North Koreans in the Korean War and the 2400 tons per day of *explosives alone* used by the Germans in World War II. In Germany, when thousands of trains required large classification yards and fairly regular schedules, air power restricted traffic by destroying yards and cutting bridges. But in Vietnam trains are more independent of yards, and the much smaller quantities of supplies can be carried on the backs of porters around breaks in the rail line or across rivers on small ferry craft.

Many bulk supplies come in through the port of Haiphong, but the rail lines from China are also capable of handling this material. In addition to the rail lines, trucks and porters from China could handle the Haiphong imports. Lighters could also be used to unload ships at points other than Haiphong. Concentrated attacks against both Haiphong and the rail and road networks from China could have restricted the flow and greatly raised the costs to the Communists, but this had to be weighed against the risk of widening the war.

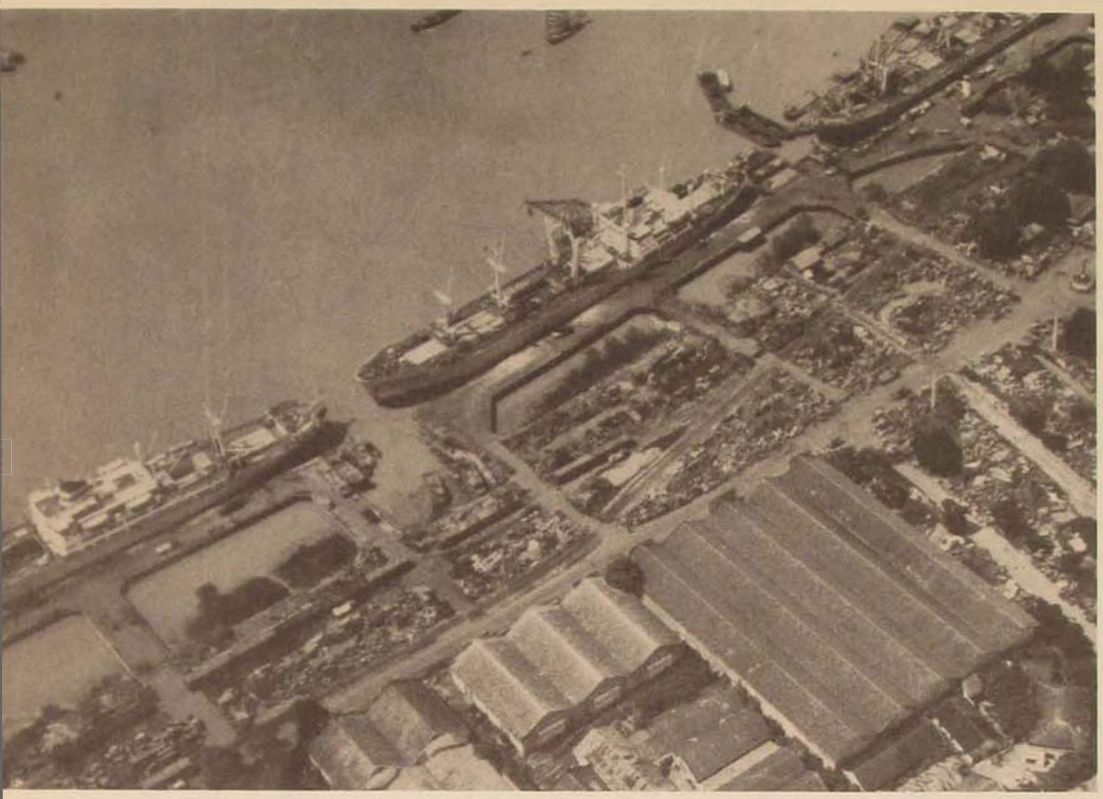
Although interdiction could not cut off all supplies, it could prevent high levels of sustained enemy operations in the South. Clearly, operations such as the artillery attacks on our positions in the demilitarized zone, and particularly the siege of Khe Sanh, could not be maintained for long periods of time. Even if the 20,000 enemy troops around Khe Sanh had used the estimated average logistic support of the entire war effort in the South—some 100 tons per day—they could not have matched the firepower of our 6000 defenders. The latter received over 150 tons of supplies per day by airlift and were supported by more than 1500 tons per day of munitions delivered on enemy targets by bomber and fighter aircraft.

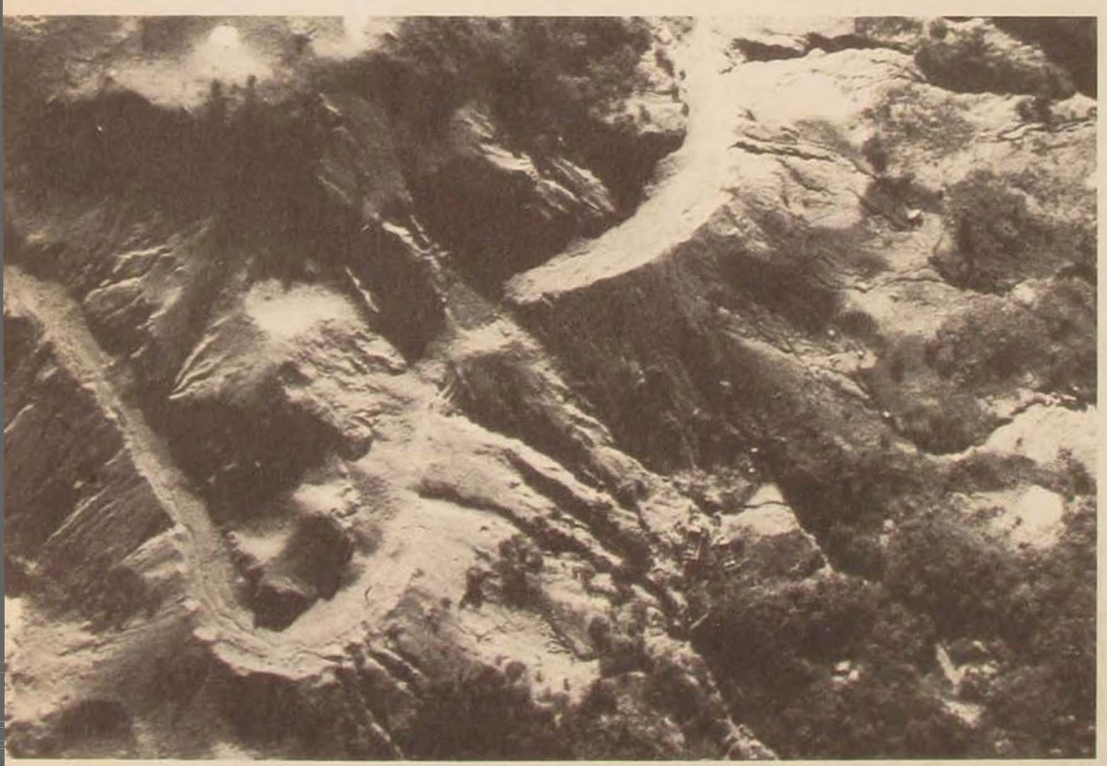
Air strikes against military installations, roads, railroads, and watercraft in North Vietnam slowed troop movements and destroyed or delayed many supplies on the way to the South. As a result, enemy units in the South often were short of personnel and munitions. They could not rely upon regular resupply and instead had to depend upon hidden caches, which often were discovered by the Allies before they could be used.

Eventually, our bombing placed practical restraints on the buildup of enemy troops by draining manpower—we believe some 600,000 men—into additional transportation

Continued on page 12

Freighters unloading at the North Vietnam port of Haiphong would be easy targets for our interdiction; yet such action would present the risk of intensifying the war.





Landslides that cut North Vietnam's Route 15 near Dong Hoi, caused by USAF fighter-bomber strikes early in 1968, still had not been repaired the following October.

The hardy C-47, armed for the attack role as AC-47, fires its miniguns at the rate of 6000 rounds per minute against known Viet Cong emplacements in South Vietnam.

tasks, road and railroad repairs, and antiaircraft defenses. This undoubtedly contributed to the gradual decline in age level and training of the troops infiltrating to the South.

It follows, then, that while interdiction could not end the war by completely eliminating essential supplies, it could make a major contribution to the combined war effort being waged by ground, sea, and air forces throughout Vietnam, and it did. Interdiction could consume enemy materiel, personnel, and vital energy, and it did. It could disrupt and delay supplies and replacements, hindering enemy combat operations in the South, and it did. It could provide a key lever in our effort to bring the enemy to accept negotiations, and it has done that, too. There seems no doubt that the American and Allied lives saved in Southeast Asia as a result of the interdiction campaign and the move toward a negotiated peace have been worth the cost of aircraft lost and even the casualties—thankfully relatively low—in our air operations over North Vietnam.

How Much Bombing Was Required?

Though our bombing of North Vietnam was essential to disrupt infiltration and supply schedules, raise the costs of aggression, and give hope to the South Vietnamese, this left unanswered such questions as what kind of bombing and how much.

It was clear that we should not engage in massive attacks against the civilian population. Unlike World War II, this was not an unlimited war. Furthermore, even if population attacks could have been justified, their military value was uncertain. As noted in the Strategic Bombing Survey, population attacks were ineffective against Germany and seemed to affect Japan only after her industry was paralyzed and her allies gone.

Since our intention in Vietnam was to influence North Vietnam to end its aggression in the South and since the level of this aggression could have increased manyfold had China entered the war, the U.S. government tried to avoid an extreme counter action. Initial bombing was limited to military installations and transportation systems in the southernmost part of North Vietnam. The Administration felt that this course would provide the best chance of influencing the North Vietnamese to accept a political solution rather than enlarge the military engagement.

Unfortunately, Hanoi and its allies were ready to pay a high price for military victory, since they considered the war a critical test of a new strategy. General Giap, North Vietnam's Defense Minister, asserted: "South Vietnam is the model of the national liberation movement of our time. . . . If the special warfare that the U.S. imperialists are testing . . . is overcome, then it can be defeated everywhere in the world."

As the flow of supplies and infiltration continued, our air attacks increased. Some critics have found fault with the gradualism of the U.S. bombing policy. Even some of those who favored a graduated bombing campaign felt that a more rapid buildup of attacks on the significant targets in North Vietnam would have been more effective than the policy followed. Their argument stems from the classical military doctrine which emphasizes surprise and concentration of force. It now seems likely that more extensive initial strikes against military installations and supply routes and a more rapid expansion of interdiction might have had a greater impact in driving home to the enemy the probable high costs of the war. We will never know for sure whether the increased pressure of such strikes would have brought us closer to peace.

A slow expansion of interdiction is probably not the best tactic, since it allows time for the enemy to become conditioned to the slowly rising costs. However, immediate unlimited interdiction in North Vietnam would have meant an increased risk of expanded war, which we preferred to avoid. In 1950 the risk of expanded war had been misjudged—and underestimated—when Chinese armies responded to our advance into North Korea, even though at that time we had a near monopoly on nuclear weapons and were acting as part of a United Nations force.

Even today there is no certain answer to

A USAF C-130 delivers its cargo to besieged Khe Sanh by means of the low-altitude parachute extraction system.

105 Thunderchief mechanics and munitions men at Korat, Thailand, cooperate keeping their "Thuds" combat-ready.

the question of exactly what level of interdiction we should have chosen in Southeast Asia. All that can be said is that our air attacks were planned with the hope of achieving optimum political-military effect. We increased the bombing—and on occasion decreased it—in ways thought most likely to both handicap enemy military operations and influence the North Vietnamese to seek a negotiated settlement. Changes in the pattern were sometimes gradual, sometimes abrupt, but always aimed at the advancement of our ultimate goal.

Limited War Requires New Types of Equipment

By the time air operations began in Southeast Asia we had made considerable progress toward improving our conventional war capabilities. Nevertheless, our conventional munitions and equipment had not been designed specifically for the type of warfare we encountered in Vietnam, partly because it takes so long for policy changes to be supported by hardware changes and partly from the immobility of large organizations. Wars at higher levels of intensity, in other environments, pose the highest risks for the U.S., and thus most of our Air Force was oriented toward those circumstances.

We have been fighting two air wars in Vietnam, distinguished by the types of targets and the extent of air defense.

In the north, the F-4 and F-105 aircraft have had to suppress missile and gun emplacements in order to reach their targets. The antiaircraft fire has been the most concentrated in the history of warfare. To deal with these obstacles, we developed tactics and new electronic equipment to defeat the enemy surface-to-air missiles and the radars directing enemy defensive fire. This has virtually neutralized the North Vietnamese surface-to-air missile threat. To further suppress antiaircraft fire, we perfected packages of bomblets that were very effective against gun crews. New glide bombs, using a variety of guidance systems, increased bombing accuracy and reduced aircrew exposure to target defenses.

In South Vietnam a more permissive environment allowed us to increase firepower and concentrate less on aircraft survivability.

In supporting outposts and garrisons we needed highly accurate and heavy firepower available for long periods of time, day or night. Transports, such as the imperishable C-47 and later the C-119, were converted to gunships carrying several fast-firing machine guns and thousands of rounds of ammunition. The guns were mounted to fire from the side of the aircraft so that the pilot could keep up a continuous stream of withering fire while circling the target. Larger C-130 gunships were equipped with a variety of sensors that could find the enemy hidden in the jungle and also deprive him of the protection of darkness. Whenever it became necessary to interdict large enemy storage and collection areas and infiltration routes, the B-52 carpet-bombed in a tactical support role.

We have made considerable progress toward overcoming darkness and poor visibility with airborne floodlight illumination and sophisticated optical devices. Moreover, ground-based radar has helped to solve the problem of poor visibility by directing aircraft to bomb-release points. However, we cannot assert that we have developed all of the needed capabilities. With one eye on Southeast Asia and another on possible future tactical demands elsewhere, we are still working hard to improve both interdiction and close air support of ground troops under night and bad weather conditions.

We Must Not Learn the Wrong Lesson

Many nations have discovered that effectiveness in one war can easily lead to ineffectiveness in a subsequent war if its planners spend too much time looking confidently backward. To be sure, lessons can be drawn from the past. But it is doubtful that we should plan on the basis of the same historical or geographical conditions recurring. Possibly the worst approach we could take to the challenge of improving our air capabilities would be to

narrow our point of view to the problems of Vietnam. It is highly unlikely that the same political and military conditions will face our nation in any future conflict. In a war with an enemy lacking access to outside support, bombing the *sources* of supply should be decisive as it was in World War II. Similarly, interdiction could be quite different when related to a mobile conventional battle, as in the Normandy campaign.

Moreover, in some future war we might have to fight for air superiority, whereas in Vietnam we achieved it almost by default. Therefore, we must have the capability to defeat enemy air forces in air-to-air combat in future conflicts. Winning the air battle may win the war; losing the air battle will almost surely forfeit the chance for military success.

Although the most likely future conflicts probably will be fought in physical environments different from Vietnam and could be at very different levels of intensity, they are still likely to be fought under similarly stringent political controls. Therefore, the Air Force must be flexible enough to adjust its operations quickly to conform to both the political and military requirements of particular conflicts. Air power has again shown itself to be uniquely versatile. It can be quickly and precisely applied against aggression, in a variety of ways and at a rapidly varying intensity—for military purposes, as a political signal, or in complex military-political negotiations. If we fail to understand, perfect, and make use of these characteristics, we are blunting or discarding one of our most valuable means of defense.

Washington, D.C.

In a sense this article constitutes Dr. Harold Brown's valedictory as Secretary of the Air Force, for it was written during his final days in that office. In February of this year Dr. Brown took up his new duties as President of the California Institute of Technology at Pasadena.

THE EDITOR

CHINA: THE ILLUSION OF POWER

Dr. Richard L. Walker

SOME time ago the Chairman of the Senate Foreign Relations Committee, Senator J. William Fulbright, ruminated on U.S. foreign policy, and in some detail about our Far Eastern and China policies, under the title *Old Myths and New Realities* (1964). Perhaps, in discussing China these days, the subject heading might better be "New Myths and Old Realities." Our fascination with the grandiose experiments in Communist China has frequently led us to ignore some of the basic realities of the Chinese scene that are likely to remain. Of course there have been dramatic developments inside China, but there have been dramatic developments all over the world. And the drama of what has been happening outside China may be far more important for the world than the destruction that has been recently related to the Great Proletarian Cultural Revolution.

Our Assistant Secretary of State for East Asian and Pacific Affairs, William P. Bundy, has recently remarked: "Communist China is without doubt the most serious and perplexing problem that confronts our foreign policy today." An interesting fact about China and our interpretation of it is the wide fluctuations that have characterized the assessment of what China and its power are all about. On the one hand, some leading American scholars, favorably disposed in some ways toward the large-scale experimentation in human engineering by Peking, argue that Communist China is such a great world power that America dares not antagonize it. On the other hand, others assert that mainland China's power has been grossly overestimated and we have given Chinese Communist leaders too much credit and overplay their position on the world scene.

A leading American China scholar published a book in 1967 in which he stressed the modernization, sophistication, and potential of China under Communist rule. He said: "The Communists have created the foundations of a modern industry, science, and technology, and China is becoming one of the world's great industrial nations." Yet, only a few months after this statement appeared, the *Peking People's Daily* carried an article hardly reflective of a modern approach to science and technology. The article claimed that as a result of studying the "Thought of Chairman Mao" in one of the hospitals in Shanghai, nurses had reduced their training period to

three months and that one nurse was already proficient in brain surgery in that short time.

How, then, does one assess the great power that could be China's? Peking itself asserts that it is a power of top importance, a super power at the center of world attention. The final communiqué of the recently convened Twelfth Plenum of the Chinese Communist Party asserted: "We are not in the least isolated, for the people who want revolution comprising over 90 percent of the world's population are our friends." Then, too, there has been the reaction to China's nuclear detonations among her weaker neighbors. How should we assess China as a nuclear power? It is worth remembering that a number of people who served in China during World War II shook their heads dourly and predicted that China would never be a world power. We recall also that Winston Churchill disagreed with Roosevelt's determination toward China's great power status. Obviously, there has been wide diversity of opinion in the assessment of China and its power.

An interesting aspect of this diversity for the policies of the outside world, however, is that the assessments may be as important as the power itself. That is to say, what people think is sometimes more important than the facts. The assessment of China's power may be largely composed of myth and wishful thinking, or of unrelated facts. It may stem from the phrases handed down through history, from the statements of the Chinese themselves, from the China-admirers, or from the irresponsible manufacturers of the threat of the "yellow peril."

The documents are replete with historical claims to great power status by the Chinese. The emperors through many dynasties and centuries asserted their all-encompassing sway and even proclaimed that they were the governors of the world. In the fourteenth century, for example, the first emperor of the Ming dynasty said: ". . . since our emperors governed the whole world, China formed the central power within which to govern the barbarians." In the following century a Chinese scholar wrote: "Our emperor plans his government by modeling himself on his heaven; the fame of his teaching has spread; the East is impregnated with it and the West has received it. There is no darkness but is brightened; there is no distance but is illuminated." Again, in the eighteenth century the Chinese emperor told England's King George III: "Swaying the wide world, I have but one aim in view, to maintain a perfect governance."

As the Chinese have asserted their importance, their central position, their world sway, much of the language has been repeated, many of the claims have filtered out, and this in part eventually finds its way into the textbooks. Even today we hear, particularly on the part of those who have become enamored of Chinese culture, a repeating of the claims that China is, so to speak, the center of the world, at least the world of Asia. The "Chinaphiles" have helped to develop the image of a super land power with which other countries dare not contend. Whether reinforced by the memory of human sea tactics in Korea or assertions connected with the great parades of organized masses in Peking, many people have eventually absorbed and in turn projected this image of great power, unlimited power, in interpreting China. Add such items as Napoleon's warning not to disturb the sleeping dragon or the China fixation of her neighbors, which has been artfully exploited by Peking and called upon frequently by the overseas Chinese, and we can begin to appreciate the critical importance of our own assessment of China's power, given America's decisive position as the strongest single power in the Pacific area.

We obviously have an obligation to be as realistic as possible about what China is, what it is not, what it can do, and what it cannot do.

For the sake of schematization and discussion, it can be noted that there are eight general reasons usually adduced for asserting that China is a super power in the world. These are reasons that the Chinese themselves use and that much of the rest of the world accepts.

The first of these obviously is population. We see all too many claims that population is a source of formidable strength. Many times

we have heard that one-quarter of the earth's population cannot be ignored. The emperors of old argued that the "myriad millions" of China, their mighty population, constituted an element of strength. Compared to the minuscule or minor populations around China's borders that had not yet learned to match the Chinese in intensive agriculture, China's millions were indeed formidable. But within the context of the modern industrial world, we are enjoined to ask what kind of population, how mobilized, and how much capital is required to make this population formidable? It is estimated that up to $10,000 capital per year and other investment are required for one college student in the United States today, and we are dissatisfied with our system. Imagine the investment necessary for China to have, proportionately, even one-tenth the number of their population going to school in high-level, sophisticated, modern technological institutions, as in the United States.

Even if the world concedes China 800 million people, still only 20 million at most are engaged in the kind of modern technological production that is related to power in today's world. In terms of nonhuman power and energy, China, with 800 million people, finds itself far behind the middle-level powers in Europe.

A second basis for the claim to great power status for China is linked to its history. The cultural influences of the past have undoubtedly swayed many people. For example, the Japanese have long felt that, for historical reasons and because of a cultural debt, China should be treated as a great power. It should be noted, however, that since the Great Proletarian Cultural Revolution even the Japanese, including a number of prominent Japanese Socialists, have not been so uncritical about China. Many are abandoning the guilt complex which held them in grasp in the 1950s and early 1960s and which was not unrelated to an uncritical assessment of Chinese power.

As an extension of the historical great power argument, some scholars and diplomats have asserted that China has a natural sphere of influence. This "sphere of influence" argument for China's great power status has been developed, for instance, by Professor Hans Morgenthau. But the acceptance of this argument has all too frequently had deleterious by-products. It can, for instance, lead to the underplaying of the role of Japan, the third industrial power in the world. The "sphere of influence" argument, we should remember, was used to justify Japan's own expansion four decades ago. Then, too, the new nations of Southeast Asia do not want to be a part of China's sphere of influence; their leaders have said this forthrightly many times. They refuse to accept any modern or historical grounds for the power of "The China model" in their future.

A third item that has helped to build the illusion of great power for China—one that has entranced Americans for more than seven decades—is the persisting myth of the "China market." It is true, of course, that some nations are doing a comparatively thriving business with mainland China—West Germany, France, Britain, and Japan. Yet the mystique of the great China market is an inflated one. Eight hundred million customers may sound impressive, but the total gross national product

for mainland China for 1967 was estimated roughly at only 75 billion dollars, and China's foreign trade remained relatively small. Uncritical assertions that overplay the "China market" ignore the simple economic fact that the greatest trading partners of industrialized countries are other industrialized countries. The more industrialized, the more developed a country, the greater the proportion of its trade with other industrialized countries. Mainland China's foreign trade is likely to continue to be a relatively minor factor in world trade.

A fourth argument is the geographical size and extent of China. It *is* a big country, to be sure, but it is a divided country, and there is far less geographical unity than most of us appreciate. The division and the inhospitable terrain of much of China may well be sources of weakness rather than strength, but aspects of the relationship of geographical size as a basis of weakness are frequently forgotten.

A fifth reason for according China great power status has been in terms of modern military power. The Chinese Communists have a nuclear capability, it is true, but this has been achieved at the expense of solving some of the problems which might have been helping China to move more rationally into the twenty-first century as a great power able to sustain a modern military force over a protracted period. Other countries have far more know-how —Japan, West Germany, even Sweden—and an equally impressive industrial base. They are eminently capable of matching China's achievements in nuclear power. They have, however, chosen a path of modernization and a philosophy of peace, and, as a result, their potential power may eclipse China's in a revolutionary and technological age. But China's military forces in-being and her capacity for short-term military engagements remain a formidable power base in the Far East.

A sixth and perhaps the most telling and important argument for China's great power status lies in the relativity of power—the fact that there are many minor neighbors who are frightened by Peking's assertiveness. Prince Sihanouk has said, "When elephants quarrel, the ants and mice run for cover." Little Cambodia with its relatively minuscule population is dwarfed in every respect. When Sihanouk goes to Peking and witnesses the tremendous parades of over half a million civilians as well as mobilized military might, his reactions help to build the vocabulary and images of a formidable China. The weakness and division around the borders of China have thus helped to build the picture of an all-powerful China.

A seventh reason lies in the achievements of the first ten years of the present regime. When the Chinese Communists came to power, they faced formidable odds: corruption, inflation, a breakdown of transportation, intellectual disillusionment, and many other conditions which have characterized underdeveloped countries. But in those first years the Communist leaders achieved near miracles. They displayed a remarkable verve and energy. By the end of the First Five-Year Plan in 1957, China, despite some of the limitations mentioned, was on the way to becoming a modern industrial power, and in many re-

spects it remains a modern industrial power. It is, however, obviously still not a first-rate one or a great one. The illusion of power also stemmed from the impressions of the guided tourists who went to see the "New China" in the first ten years. Many were sympathetic towards a regime which seemed in those early years to have answers for China's great problems.

Finally, there is the matter of ideology, and this is important because revolution and instability are constant worries in a world that seeks peace. The strident propaganda from Peking, claiming Communist China's revolutionary leadership, has had formidable world impact. It is not inconsequential that even some Americans have come to believe that Mao Tse-tung and the Chinese Communists should be credited with conspiratorial involvement and ideological leadership of campus revolutions in the United States. Such reactions help to build the image of a powerful ideological force coming from China. It seems likely, however, that 99.44 percent of our student protest is just protest rather than a reflection of Chinese power. Surely Maoist ideology does not hold that much attraction in America.

Such reasons as these combine and create the illusion of China's great power. Obviously the assessment of China as a great power has formidable implications for present-day international relations. In the tragic and complicated American involvement in Vietnam, for example, the China threat, the illusion of the great power of China, has perhaps intimidated some American leaders and may well have prevented us from assuming certain tactical or strategic approaches that might have been more effective. This is just one reason why the mystique of "great China" deserves careful examination.

As INDICATED earlier, what we think may be more important than what is. What we think about China, how we assess it, may be more important than the realities of power. Therefore, it is perhaps useful to consider some of the bases for questioning China's power. It is, in fact, possible to turn the eight items around and find that some of the supposed elements of strength are in reality evidences of weakness.

Five points at least deserve elaboration. The first of these is the population problem. China's population, far more than we realize, is an incredible drain and weakness. Walt W. Rostow once pointed out that China faces a Malthusian counterrevolution, and Mao Tse-tung, the inconsummate revolutionary, has been unable to meet it or defeat it.

Hunger in China thus remains a real factor. This tragedy is doubly unnecessary, because of the organizational efforts plowed into impractical schemes dreamed up by Mao, a deranged Chinese peasant become God, with no knowledge of economics, or of modern science, impatient with figures, and certainly with little knowledge of the outside world. All too frequently Mao's own personal dicta have caused the Chinese people tremendous sorrow and suffering. The population problem, the Malthusian counterrevolution, is real and pressing. In six months more people are added to the already overburdened Chinese land than the total population of Louisiana and Alabama. Further, contrary to the usual myths projected about the dynamism of the vast hordes of Chinese masses, hungry people are ineffective and apathetic. They do not necessarily add power to a country, though they may through their submission help to build the egos of the autocrats who direct them, and they may provide cheap conventional firepower in times of great land wars.

A second area where there is need for a more realistic appraisal of the strength of Communist China involves the problem of unity. We frequently see that word "China" on a map, and we forget the division and diversity of China. Even among the Chinese or Han people, divisions and antagonisms are great. Contrast, for example, the sometimes contemptuous Cantonese with the benign, condescending man from Peking. Most analysts forget that 60 percent of the land we concede to China on our maps belongs to non-Chinese people: Tibetans, Uigurs, Kazaks, Uzbeks, Mongols, Chuangs, Lolos, Miaos, Hui-

hui, etc. There are roughly 50 million non-Chinese minorities in China today who have not been successfully convinced that they really are second-class Chinese citizens. They generally have one thing in common, a dislike for the Han people.

Again, there are the divisions within the Communist elite itself. There are serious divisions within the People's Liberation Army (PLA), between the party bureaucrats and the revolutionaries. The alienation of the intellectuals, to use a favorite phrase in America, is almost complete in China; the key intellectuals, Party and non-Party, have been sent down to the commune. But we can wonder: "How are you going to keep them down on the commune after they've seen Peking?"

The decline in verve and unity in the second decade of Chinese Communist rule has too frequently been forgotten. We have tended to ignore downward dynamics because of our fascination with the first decade. If the first decade was reason for asserting a great power role for China, what has happened in the last ten years of Chinese Communist rule at least raises some questions about how much strength China actually has in today's world. This is a third area where reassessment of China's power status is called for. No longer is there an unquestioned unifying force of a world Communist movement. No longer is there the driving strength that comes with the unity of a monolith that was so much geared into the whole ideology of the Communist system. Much of the cause of the fracturing of the world Communist church is traceable to some of Mao's un-Communist schemes, such as the "Great Leap Forward." Mao and his impractical followers promised their people heaven in three years or that they would overtake Britain in fifteen years. As one Canadian correspondent put it, it seemed as though someone had gotten into the driver's seat of a locomotive, turned the throttle on full, and was just sitting there laughing and waiting for something to happen. Again, there came the Socialist education movement of 1962 and finally the Great Proletarian Cultural Revolution, which began in late 1965 and has now disrupted the universities and graduate schools and dealt a ruinous blow to the educational system. The future impact of the last ten years will likely prove sad indeed for the Chinese people. The Maoists seem, for instance, to have created an "education gap" for the Chinese. In effect, Chairman Mao and his colleagues have also created a major generation gap in mainland China. Its full portents have not generally been realized.

Fourth, there is the isolation of China. On October 1, 1968, the only high-ranking foreign representative present in Peking for the nineteenth anniversary of Communist rule came from China's strongest and most faithful ally, the People's Republic of Albania. (Mainland China adds the total population of Albania in just six weeks!) Peking lives in a fantasy world! The present drive toward autarky in mainland China has been accompanied by a belief in intellectual, scientific, industrial, and ideological self-sufficiency. Since the Great Leap the Chinese have been involuting, turning inward, disassociating themselves from the major intellectual currents and developments in the world.

The *New York Times Magazine* on November 17, 1968, carried an interview with a veteran French journalist who said:

> . . . the Chinese are completely cut off from the world and seriously believe themselves the most advanced people on earth. Their contempt for the West is limitless and is equalled only by their ignorance of the outside world.

It is interesting to see the parallel with the observation in 1840 of a noted British journalist who wrote:

> Not unjustly proud of their country, her people and her rulers have believed her impregnably strong, adopting but little of the wisdom of other lands and adopting that little in native garb, they have thought themselves the first among nations in knowledge as well as material power. They have displayed to foreigners, in all their intercourse with them, the petty tyranny of the self-sufficient pedagogue and have frequently laid on them the strong hand of the unrestrained despot.

It should be noted that the isolation and fantasy world of the Chinese stem in part from the derangement of the personality cult of Mao and the "Thought of Mao Tse-tung."

Finally, there are the changes outside of China. The remarkable productive growth of Japan, for example, constitutes a factor against which China's power must be measured. The 100 million people of Japan in 1967 turned out 62½ million tons of steel, moved into the modern computer age for marketing, and displayed a dynamism and organizational ability which have enabled them to become the third industrial power of the world. There has been an almost equally striking adjustment made to the modern world of the third quarter of the twentieth century by other free countries in East and Southeast Asia. One of the most encouraging and dynamic examples of this is the Republic of Korea. What has been accomplished by other Chinese in Taiwan in their attempt to adjust Chinese civilization to the modern world is of great importance, too. Or again, there are the examples of Malaysia and Thailand or other countries that have developed alternate patterns of relations with the outside world. More important, perhaps, the countries around China have developed and are continuing to expand patterns of relations that are going to be important to us and for them in the 1980s: industrial, financial, tooling, intellectual. The Chinese self-exclusion from these patterns may result in even more problems and weaknesses for the Chinese people in the years ahead.

WITHIN THE PATTERN of such strengths and weaknesses as have been enumerated for Communist China, it is of course necessary to strike a balance. In large part American foreign policy, in dealing with mainland China over the years, has been balanced. It has frequently reflected more balance in the appraisal of Communist China than have its critics, whose assessments of China's power and potential have fluctuated widely and whose seeming derogation of U.S. policy as being on dead center may well be an accurate description of a good policy.

To be sure, China's current problems—division, alienation of the intellectuals, regionalism, provincialism, economic decline—should not be allowed to mislead us on China's continuing capability to threaten peace in the western Pacific. Communist China can be a great danger, and we dare not, to be sure, underestimate the possibility of the danger's becoming very real. It is likely that the experts in 1940 and early 1941 felt that Japan would never dare attack the United States. They could have pointed to divisions in Japan and its still relative weakness in the same way that it is possible to underplay Communist China today. We must therefore not dismiss the danger posed by Communist China out of hand. There is, in the first place, the possibility that

the paranoia, the current megalomania of the aging autocrat, or the power struggle that follows his death could push the Chinese leadership into an external adventure for the sake of solidifying or unifying their country. The Security Research Council of the Liberal Democratic Party in Japan has expressed this as one of its major worries. Irrational external ventures are certainly possible by a nation that has believed it could outstrip Britain in steel production with backyard iron furnaces. Second, the Communist leaders are well aware of the blackmail potential of their nuclear weapons. Almost inadvertently, the Soviets and the U.S. by playing up Mao Tse-tung's statements about being willing to see millions of people lost in a nuclear war have helped to build credibility for Chinese threats. Third, Mao's strategy of wars of national liberation offers an inexpensive path to world influence for a weak power. The training of guerrilla cadres from target areas is, after all, not an expensive process, and there is still romance connected with revolution. Mainland China also retains the capability for quick and decisive military-political power plays, such as the limited war against India in 1962. Then, too, we dare not forget that what has been fashioned by Mao Tse-tung is a totalitarian mode of operation, and it still is able to act within a totalitarian framework.

All of these facts are important, and we do have to weigh them with detachment. For this reason, it is important for Americans to know that we have a far more talented, well-trained group with more information about mainland China in the service of our government today than we ever had on Japan in pre-World War II or in the early days of the cold war for the Soviet Union. Indeed, one reason for dismay during recent years has been the implicit assumption of some of the critics of U.S. policies in the Far East that these well-trained, dedicated people, many of whom are working 18 hours a day, are somehow part of an "establishment plot" (to use the current New Left verbiage) to do our country in. There is the implicit assumption that the critics, many without background, experience, or expertise in the Far East, have more valid bases for judgment of U.S. policies than the talented and trained experts who serve our government so well.

We in the United States have been required to fashion policies which can endure against the outward thrusts of a frenzied giant and at the same time to withstand the polemic thrusts of critics who may be somewhat emotionally accepting one or another of the interpretations of China, either as a tremendous power giant or as a country which need not worry us. Yet those who design our policies must deal with the "givens." America is a Pacific power as well as an Atlantic power; we have commitments; there are these interrelationships, especially security relationships, around the periphery of China. From the critics who base their assumptions on China's great power, any time American policy seems to be too firm, there is a dire warning of the threat of a nuclear holocaust.

Our policy over the nineteen-year period of existence of the Chinese People's Republic, though obviously not designed in heaven, has nevertheless (possibly in some instances through inadvertence or even absentmindedness) been successful. It has helped as a major force in restraining Peking's great power pretensions and ambitions. Of course, there have been mistakes, but we do not have a monopoly

on stupidity. The leaders in Peking have at times stumbled from one blunder into another. Their U.S. policy has been dogmatic and inflexible. Meanwhile, around the periphery of China, the U.S. has been a major motive force in helping to create viable alternatives to the violent Chinese approach to development. It is the citizens of the United States, their taxpayers, their troops, and their blood that have helped hold up a shield against a totalitarian China, hopefully until the madness has burned itself out and a great and wonderful people can once again start to solve their problems in consonance with the mainstream of the rest of the world.

We have displayed a growing understanding in our policies for an area of the world for which we had little preparation. We have, in effect—despite the criticism of some of our firmest Western allies—waited (with Oriental patience?) until the Chinese model has been discredited, until the Sino-Soviet dispute has undermined the appeals of the Communist movement around the world, until a number of our friends have learned that their brightest future depends upon refurbishing their economic and political ties with the West rather than with the Communist bloc. We waited until the myth of Afro-Asian solidarity created at Bandung, Indonesia, in April 1955 ran its course and the leaders of newly independent nations learned the importance of worldwide cooperation in development. We have waited until a great number of Socialist or even Communist leaders throughout the Far East have learned that Mao did not possess the answer for their peoples.

Our policy has met the continuing need to strike the balance, but we need to continue to "play it cool." It is necessary to keep the door open for change in the policies of a new Chinese leadership that may emerge in the post-Mao period and who may urge that our two nations begin to get back into some sort of peaceful atmosphere. When that happens, a critical issue that has helped to deny Mao his myth of infallibility and inevitability, which is the single issue between America and Peking, is likely to disappear.

The future is obviously not clear. Given Chinese super-power ambitions in the years immediately ahead, it is unlikely that we can look forward to anything other than a continuing state of unholy deadlock in our relations with a country that still pretends it is the center of the world. Surely, we who bemoan our fate, we who worry about our tragic involvement in Vietnam, should be able to maintain a balanced and detached assessment of this currently divided angry giant.

We are obviously going to have our national purpose tested by the China problem in the years ahead, but surely there was never a fairer test of our ability to endure. Alexis de Tocqueville, that great commentator on American democracy, noted that democracies can pull themselves together and give great support in times of crisis, but he doubted whether they were suited for the long, sustained storms that beset the history of nations. To date our China policy has shown our ability to adopt a strategic perspective and sustain a long-range view.

Wars of national liberation, the training of cadres for violence, the ideology of violence —these are not the path of the future in Asia. Whether the Maoist formulas are the future of mankind or whether some adjustment among the peoples in a framework of understanding is to be the path of mankind is in large measure what Vietnam has been all about.

As we continue to confront the Chinese Communist center of the encouragement of revolutionary violence in the Third World today, we might borrow the words of Mao when he proclaimed his government in 1949. He said: "China has stood up." In terms of responsibility, in terms of meaningful sacrifice and potential long-range success, the United States as a Pacific power has "stood up." There is today a firm basis for confidence (though our critics, internal and external, have been many) that the assessment of our performance in facing a modern totalitarian regime in its outward frenzied thrust period will be judged as a "job well done." We have not been led away from the correct course by illusions about China as a super power.

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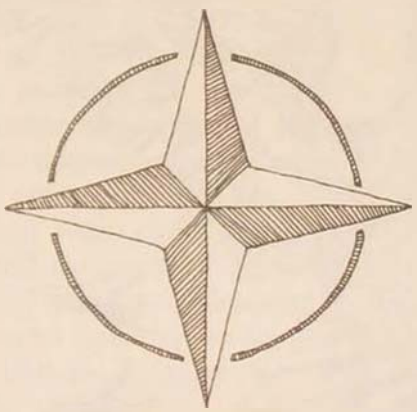
THE ROLE OF CONSULTATION IN AMERICAN DEFENSE POLICY

RAYMOND J. BARRETT

CONSULTATION has come to play an important role in American defense policy. As part of its worldwide defense structure, the United States has a great variety of consultative arrangements with other countries. Consultation has many important advantages for the United States in fulfilling our defense requirements. It also has some definite limitations. However, we have seldom, if ever, specifically examined the attributes of this type of consultation. With a more precise awareness of the consultative process, we can better avoid its pitfalls. Equally or more important, we can use its advantages to improve our political and defense posture in the world.

National security in today's complex and dangerous world imposes stern and varied requirements. To meet these requirements, the United States has had to seek cooperation and commitments in many areas of the world and accordingly has obtained a variety of bases and communications facilities in other countries. The United States also encourages and participates in regional defense alliances, and American military forces are deployed in pursuance of these alliances and to meet other situations dangerous to peace and order. Furthermore, the United States provides military training and equipment to bolster the defense capabilities of free world nations. Success in these complex activities has required us to take into account the political, economic, psychological, and military interests of many other countries.



The United States has a variety of arrangements for consultations. For instance, the North Atlantic Treaty Organization (NATO) includes many groups providing various types and levels of consultations. The North Atlantic Council, composed of permanent representatives stationed in Brussels, meets at the ministerial level twice a year; the ministers survey the state of the alliance and related developments, try to concert their national contributions, and provide political guidance for NATO's planning. In addition to the ministerial meetings, the Council meets regularly at NATO headquarters. The Ministers of Defense from the fourteen nations other than France meet from time to time as the Defense Planning Committee. The Military Committee and its subsidiary organizations deal with many of NATO's military questions. A Senior Civil Emergency Planning Committee supervises a number of bodies planning for the civil aspects of a wartime emergency. These groups include planning boards for ocean shipping and European inland surface transport and committees dealing with petroleum, communications, civil defense, civil aviation, food and agriculture, industry, etc. The alliance at any one time also has working groups and experts considering specific problems of the moment. While common participation in NATO provides a great deal of mutual interest, achieving agreement in these various forums puts a considerable premium on constructive consultations.

The structures of the Central Treaty Organization (CENTRO) and the Southeast Asia Treaty Organization (SEATO) are not as elaborate as that of NATO, but both also have a number of consultative bodies. CENTRO has an annual ministerial meeting and an ongoing Council that meets in Ankara, Turkey. The United States attends as an observer, rather than as a full member, but participates actively. The United States shares fully in CENTRO's military planning and in its subordinate groups such as the Economic Committee and the Council for Scientific Education and Research. Similarly, SEATO has an annual meeting of foreign ministers and a Council and Permanent Working Group, both located in Bangkok, Thailand. The United States participates actively in these bodies and in SEATO's military planning and other subordinate groups.

The United States also has consultative arrangements with a number of specific countries. The base agreements with Spain, for instance, provide for a joint military committee to deal with questions regarding the operation of the agreements. It was a meeting of the U.S.–Japanese consultative committee that dealt with the recent return to Japanese control of a number of American military facilities in Japan. Australia, New Zealand, and the United States meet annually or more often in the ANZUS Council to consider defense and

political problems of mutual concern. Formally or informally, the United States must consult frequently with countries such as Thailand, Korea, and the Philippines, with whom we are engaged in joint defense arrangements.

The arrangements between Canada and the United States constitute an excellent example of ongoing and largely successful consultative procedures. The close military cooperation between Canada and the United States was not a preordained achievement. For all their similarities, there are important differences between the two countries. Canada and the United States were enemies for more than a century, and truly close military relations date only from the beginning of World War II. Over 40 percent of Canada's population is French in language and culture; the development of a mutually satisfactory bilingual and bicultural nation presents Canada with many ticklish questions. The population and economy of Canada are only a fraction the size of those of the United States, and Canadians are acutely aware of this. The Canadian government and people are loath to appear to be subordinate to the United States.

Successful military cooperation between the United States and Canada has thus meant a variety of consultative arrangements to identify and deal with difficulties and differences. The senior organization dealing with military and related matters is the Ministerial Committee on the Joint Defense; it is composed of the two nations' cabinet-level officials dealing with foreign affairs, defense, and finance. The Permanent Joint Board on Defense was set up in 1940 and has met several times a year since then. There is also a U.S.–Canadian Civil Emergency Planning Committee. Another joint committee looks after the U.S.–Canadian Defense Production Sharing Program, which seeks to give Canadian industry an appropriate opportunity to participate in defense equipment purchases. Below these bodies there are working-level groups of various types. The success of U.S.–Canadian defense cooperation testifies to the need for careful and continuing consultation and to its value.

The content and frequency of the consultative arrangements in which the United States is engaged obviously vary. This fact alone suggests the breadth and complexity of this process that we have become involved in.

Substantial common interests manifestly exist between the United States and many other countries. These common concerns are likely to increase, particularly as instability and dangerous outbreaks of violence occur as part of the developing process in many areas of the world. Common problems and common interests are thus sufficient for consultation to be useful and to provide a basis for effective consultation.

The United States needs the cooperation of other countries and probably will for the foreseeable future. Our security would be in extreme jeopardy without the NATO alliance. Facilities in several countries in the Far East

are all but essential to the support of our position in Vietnam and in Asia generally. Without friendly ports in the Mediterranean, maintenance of the Sixth Fleet and its stabilizing effect in that volatile area would be virtually impossible. Cooperation by other countries is also necessary for our vital worldwide communications and electronics network. Our access to the developing areas, which are the likeliest site of future violence, is greatly facilitated by the cooperation of certain countries. Research projects in matters important to our technological progress and defensive capabilities often require access to specific locales in

other countries. Put simply, in many practical ways the United States needs the cooperation of other countries to maintain our defenses.

To win this cooperation, the United States must make allowances for the concerns of other nations. We cannot simply address matters in terms of what we consider to be militarily desirable. On a number of occasions it might have been "quicker" or "easier" or "militarily more efficient" to station American forces in Canada to defend North America. But Canadians, a justifiably proud and competent people, have been unwilling to appear to have to be defended by Americans. Canada has thus consistently declined, even in the desperate days of 1940, to have American forces under sole American control stationed on Canadian soil.

In such a situation, even though we are acting in the common defense, we are usually asking the other government to give us something. No self-respecting government is willing to appear to be told what to do by the United States, most especially on its own soil. To get some sense of what is involved, we can imagine the reverse situation. Suppose our government gave another country military rights in this country. There would have to be very convincing justification that the step was in the best interests of the nation and was taken solely for that reason. We must constantly search for mutually acceptable arrangements; we must find ones that satisfy local political, economic, and psychological needs and still reasonably fulfill our military requirements.

The local considerations can be various. The host country may want to participate in the venture so as to develop its own capabilities. An important consideration for Spain in the base agreements with the United States was the opportunity to modernize the training and equipment of its armed forces through the U.S. military assistance that was part of the *quid pro quo*. Another country may be concerned about the effect of our proposals on its relations with its neighbors or on its international role. Or its government may seek a *quid pro quo* in the form of economic, military, or diplomatic assistance from the United States.

There may be a decided impact on the local economy, requiring careful and complicated handling. This was a concern when our bases were first constructed in Spain and in the Southeast Asian countries where new American facilities have been built in recent years. The problem could be the effect of a marked increase in wage rates on local labor conditions, or it could be the inflationary impact of injecting a large new cash flow into a developing economy. Another frequent concern is that local labor and local companies have a fair opportunity to develop their talents and participate in the new economic energy generated. Virtually all agreements authorizing U.S. defense facilities in Canada include clauses providing equal opportunities for Canadian contractors and laborers in connection with the construction and maintenance work. Elaborate arrangements have been developed in NATO to spread contracts for military facilities among the industries of the member nations.

Questions of legal jurisdiction over American defense personnel can also be sensitive, for no government wants to appear not to be master in its own house. These legal matters become more difficult to define neatly when they extend beyond the servicemen themselves to their dependents and to civilians, local employees, contractors and their employees and

dependents, etc. To what degree, for instance, should American contractors building U.S. military facilities in another country be exempt from all local taxes? They benefit from local tax-provided facilities, but any taxes they pay increase the costs to the United States government. The payment of provincial and local taxes by contractors on U.S. defense facilities in Canada has been a thorny issue. This mundane subject of taxes and exemptions is one that all governments take a practical interest in. This question, too, poses many perplexing points of detail.

Cultural and religious attitudes can also play a powerful role. The seemingly simple matter of dress can have a powerful public impact. For instance, shorts are not worn by women or men in Spain, and to wear them in public would produce a decidedly unfavorable public reaction. To avoid such a contretemps, the U.S. forces in Spain had to ban the use of shorts and some other items of clothing by Americans and their dependents in Spain. American personnel at Dhahran in Saudi Arabia had to pay careful attention to Muslim religious strictures, such as that against alcoholic beverages or those regarding the sheltered role of women. This area can be particularly sensitive because it is one in which we could easily overlook a crucial point.

This catalog of possible local sensitivities is illustrative, but it again brings out the variety of considerations involved in obtaining the cooperation of other nations. Even if the problem is essentially psychological, the United States cannot afford to ignore it. No country wants to be taken for granted by the United States, or even to appear to be taken for granted. It is obviously unacceptable for any government to appear to its people as having a limited say in matters important to the country's security. Consultation, at a minimum, can be valuable as a face-saving mechanism. This alone is a virtue not to be regarded lightly in a world of prickly national sovereignties.

CONSULTATION, more broadly, can have real practical advantages for the United States. It helps identify viewpoints. Again, this is an advantage that should not be shortchanged. It is remarkable how often questions are not fully understood by both sides. Human communication is often a defective process. Remember, for instance, the confusion of the British and Americans during our first consultations of World War II until we realized that we attached opposite meanings to the move "to table" a proposal. With the benefit of hindsight it is apparent that much of the atomic weapons controversy with Canada several years ago resulted from misunderstandings; both sides, wittingly or unwittingly, often failed to understand precisely what the other was really saying. Especially when operating across cultures and into other political environments, both sides can miss or misinterpret important considerations. Misunderstandings are far more common than either side suspects. Furthermore, in terms of systems analysis, it is important that the United States identify all its options accurately.

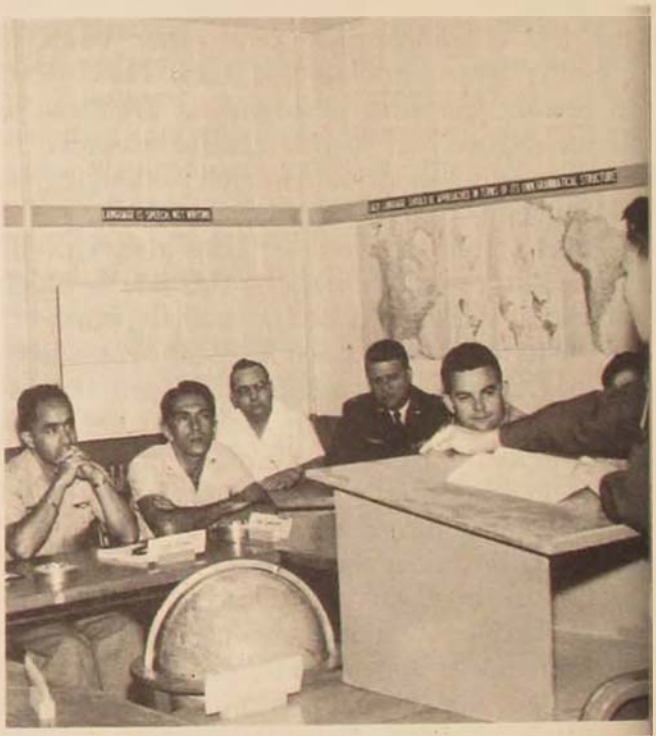
When fully understood, seeming differences often disappear or become peripheral to an adequate arrangement. At a minimum, consultations can clarify differences. Both sides can then at least be sure that they fully and accurately understand each other's position. By carefully defining the issues, they can sometimes narrow the problems and thereby make agreement possible on at least some of the

issues involved. In fact, one of the principal advantages of consultation is that candid and careful identification of differences frequently suggests mutually satisfactory solutions.

Consultation, when undertaken in good faith, tends to foster a conscious search for solutions. Since both sides have a considerable degree of mutual interest, they tend to search for acceptable middle ground. Certainly this is the secret of the general success of U.S.–Canadian consultation and accounts for much that has been accomplished in NATO. Adequate solutions can be found more often than not.

Consultation provides the United States with a forum for more informal discussion than is possible in formal government-to-government negotiating and is more in keeping with the American way. It also encourages flexibility and candor. Generally speaking, the more informal the consultation can be, the more useful it will be. Examining questions early on a "no commitments" basis enables both sides to exchange information and observations before viewpoints harden. They can thus judge the dimensions of problems and how best to deal with them. Informal discussions can also help develop among the participants the mutual confidence needed for a constructive attitude toward problems.

Consultation also has a "reverse" advantage: it gives the United States a means to make clear the practical restraints on what it can do. Despite our desire for mutually acceptable arrangements, there are limits to what we can do. We have political, financial, legal, and other restrictions. There are also



Air University's Allied Officer School

Common problems and interests are the basis for useful consultation, but for consultation to be effecti there must also be communication and understanding. U.S. military schools, both stateside and abroad, ha been particularly resourceful in promoting the ability of foreign nationals to communicate among themselv and with host country personnel. At Air University's Allied Officer School students are given broad e posure to English language usage in the classroom, laboratory, seminar, and social situation. As a resul mutual understanding is fostered and ultimate dividends are realized in meaningful consultative arrangemen

limits beyond which we cannot go if our essential defense requirements are to be met. A bedrock difficulty in the U.S.–Canadian atomic weapons dispute some years ago was the American conviction that atomic weapons were essential, under the then obtaining circumstances, to the defense of North America. These are examples of clarifications that often need to be made. Obviously it is better that this be done early in any discussions, in a friendly and candid way; it is also better done in private, thus reducing undue expectations, embarrassment, or public polemics.

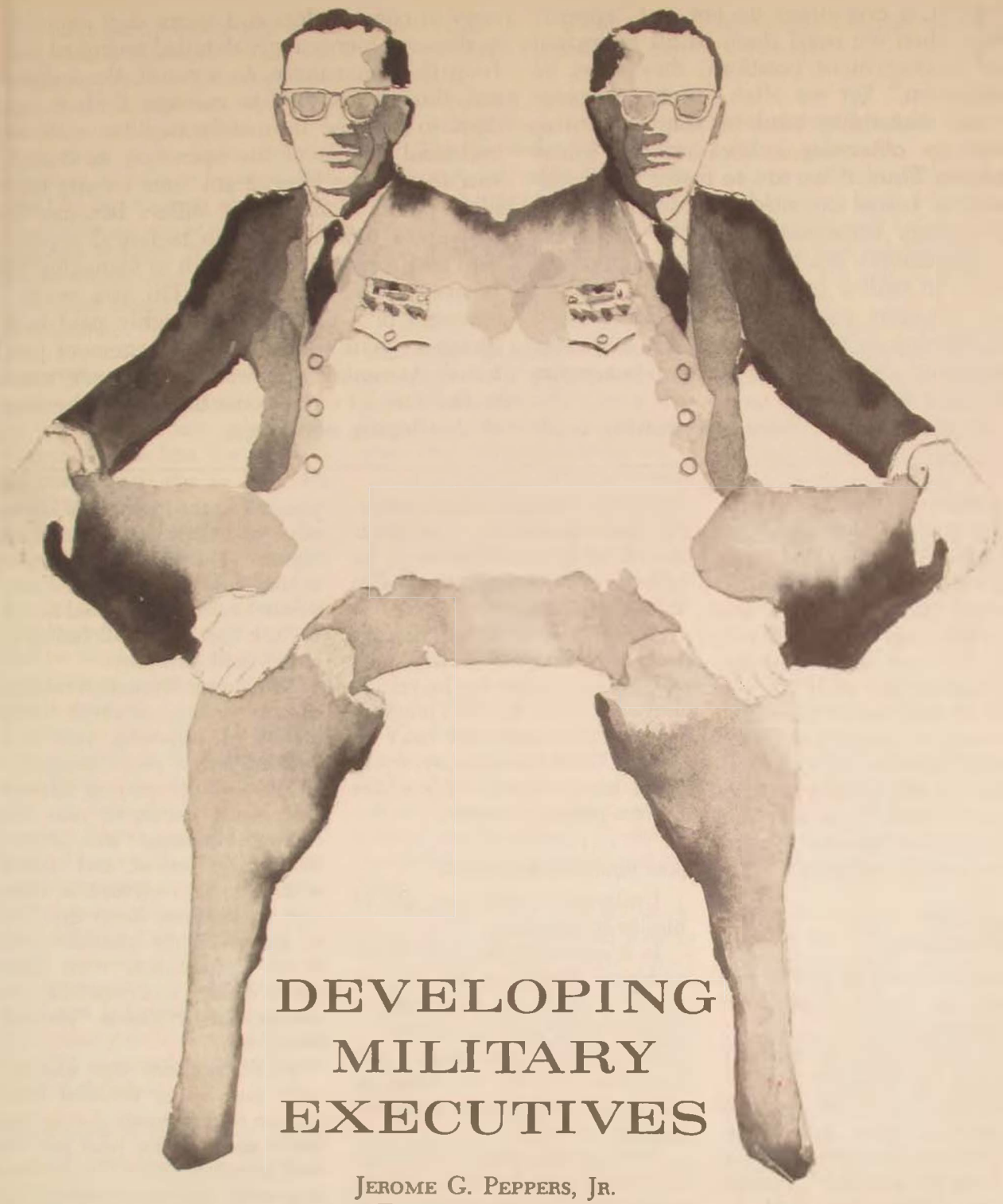
Obviously consultation also has real limits. In truly critical situations, such as the 1962 Cuban missile crisis, it is not feasible; it is not a quick-reaction procedure suitable to rapid events or to the requirement for great

discretion or maximum security. More generally, security restrictions regarding particularly sensitive subjects impose forbearance on American participants in some consultations. In a similar vein, the legal provisions requiring exclusive American control of nuclear weapons place limitations on the United States role in consultations; the Nuclear Non-Proliferation Treaty apparently will also mean similar restraints.

A variety of other considerations can restrict the participation of the United States in consultations. The United States policy interests elsewhere can impose restraints on our participation in a given consultation. We cannot always make everybody happy; we cannot make both Spain and Great Britain happy in our attitudes toward their dispute over Gibraltar. The degree of common interest and the other country's ability to contribute to the common defense also affect the usefulness of consultation to the United States. As a practical matter, the need for coherent internal studies and decisions places a limit on how much we can speculate until we have had some chance to study a matter and arrive at some reasoned ideas. Specifically, the cycle now used in U.S. defense planning makes engaging in consultation more exacting than it used to be. At what point short of the President's approval of the Secretary of Defense's annual recommendations is it proper or feasible to discuss matters with other governments, even informally? Keeping these limitations in mind is clearly important to effective consultation; but none of them frustrates or invalidates the process.

CONSULTATION has served and can continue to serve the United States well. This conclusion emerges clearly from a pragmatic examination of the process itself and its postwar development. It is equally true that consultation is no cure-all, and this should never be forgotten. The record, however, indicates that early, candid, informal discussion between two countries generally constitutes the best way to mutually effective military arrangements. This lesson should not be lost on us in meeting the many defense problems that we face in today's complex world.

Arlington, Virginia



DEVELOPING MILITARY EXECUTIVES

JEROME G. PEPPERS, JR.
ERNEST W. SPITZER

SINCE executives do not just "appear" when we need them to fill important management positions, they must be "homegrown." Yet we often fail to recognize this and sometimes tend to stunt executive growth by otherwise cultivating our junior managers. Thus, if we are to foster the development of better executives—better managers—for military organizations, senior managers and commanders must give positive guidance in order to realize capability growth in their junior managers/executives. Their aim should be to develop in their subordinates a greater management capability—to develop managers rather than technicians.

On the contrary, there is a growing tendency in commanders and senior staff members to demand increasingly detailed technical data from their managers. As a result, the individual, though assigned to manage, finds it prudent to become intimately familiar with the technical details of his operation so that he can answer the boss at any time on any technical point. Management suffers because the manager's time is spent in technical supervision and research rather than in managing the business. The question is, Do you want a manager or a high graded, highly paid technician in your subordinate management positions? Assuming you want a manager, not a technician, let's give some thought to the ways of developing a manager.

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his objective

Give the manager his objective. Tell him specifically what it is you expect him to accomplish. Establish the time frames and the relationship to overall unit goals. Be sure he understands this objective and what it is you expect of him. Don't leave him to run on the treadmill of doubt.

Doubt leads to indecision, indecision to delay, delay to snap judgment under pressure, and snap judgment to ineffective, inefficient, costly operation.

his authority and responsibility

Recognize, and be sure he recognizes, his limits of authority and responsibility.

Once you're sure the man understands his authority and responsibility (within his objective framework), leave him alone. Let him run the show without your "over the shoulder" constant attention. Prove your faith by trust. You assigned him; let him do his job.

Don't expect from him actions or decisions not within his normal sphere of authority or responsibility.

The "big" man constantly grows and assumes more authority and responsibility. Recognize this. Look for it. Fill the urge for growth as far as you can within the unit mission.

If he fails or if he displays lack of ability, work with him and for him to develop his talents and abilities. If he can't measure up to your needs and can't be "grown" into the capacity, try to place him in another job where he can produce for you.

your information demands

Understand what you ask of him in information.

Is it necessary that *you* know technical details, or do you ask for this type of information merely to prove your concern?

Are you helping when you force him to ferret out details in which you should not normally engross yourself?

Are your information demands detracting from his time and capability to manage, which is the job you assigned him?

Do you ask for data in an effort to have him make decisions just as you would make them?

A point to remember is that you can, through unrealistic information demands, establish yourself as the fountain of knowledge and the source of all intelligence. This can maltrain your subordinate manager to the point where he finds it easy and normal to "ask the boss" and forfeit his ability and authority.

Don't use information requests as a recurring, although subtle, means of imposing your will, your initiative, your thoughts.

Make your recurring information needs known to your subordinate manager and arrange the timing, format, and content with him. Ask *only* for that which you must know. Keep the "nice to know" at the absolute minimum. Information costs time, effort, dollars, and capability and reduces his available "management" time.

Don't handicap your manager with massive or detailed information requirements that are not really essential for your position and responsibilities. Be as realistic with him as you would like your boss to be with you.

your control

Don't interfere with his actions. You may discuss them with him, but he is the manager. Obviously, control is essential, and

you can't permit him to run wild. If he has a tendency to get out of hand, you should consider replacement. Until then, however, let him run his shop.

So long as he is in control, interfere as little as possible. But don't let this concern about interference cause you to neglect your manager entirely. He needs your interest and your support, but he neither needs nor wants your interference.

your support

Support him at least as well as you support any other staff element. Give him the kind of support you'd like to have for your own job.

The manager quite often has a thankless job. His most earnest actions cannot always ensure perfection in production or quality. His knowledge of your support will be most gratifying to him at those times when his operation is not optimal.

Support also means that you recognize his total unit capability. With this recognition you prevent overscheduling or overloading. Needs must be balanced against capability, and your impartial support is essential. Without question, your support must be realistic. Pampering, or too much one-sided concern, can be as detrimental as neglect. Your wise and judicious decisions will determine your unit potential and develop or retard your staff managerial abilities.

his information needs

Keep your manager informed. Don't make him work in the dark, but don't fill him with nonessentials.

Management demands planning, scheduling, and controlling. The demands can be effectively met only with knowledge. Mission changes, personnel data, and a myriad of other informational items should be—must be—made known. When you learn, be sure he learns, too.

Lack of information, at best, is embarrassing; at worst, it is catastrophic. Your manager should know that he can rely upon you to keep him informed. He, in turn, must keep his people informed.

All managers are concerned. They need to know what, why, when, who, and how. Your flow of essential information will help fill this need and help keep your people satisfied and productive in a mission-oriented manner.

your challenge to him

Challenge your manager to do his best. Give him goals that are attainable but which require real effort. Demand the best, within reason and existing capability, and keep your standards, and his, high.

Stimulate his will to work. Start him right and lead him to use his skill with a will. Don't "dare" him—challenge him! Develop your relationship so that he is always striving to equal what he feels is your opinion of his abilities.

Make him want to excel. Encourage his natural competitive instincts and lead him to the threshold of significant success as a manager.

your recognition of him

Recognize his achievements and he will take pride in his job. If he knows he is truly the manager, pride will follow. You can enhance your relationship by recognizing his actions and accomplishments.

Are you proud of your unit? Are your people proud of their unit? This is an easy measure of your success in this facet of management and command.

Your biggest challenge is to apply your leadership and control so expertly that your people willingly work without realizing your handling of command.

Good jobs must be recognized, but poor ones, too. Laudatory recognition should be given publicly, however, while critical recognition demands privacy. Commend in public; criticize in private.

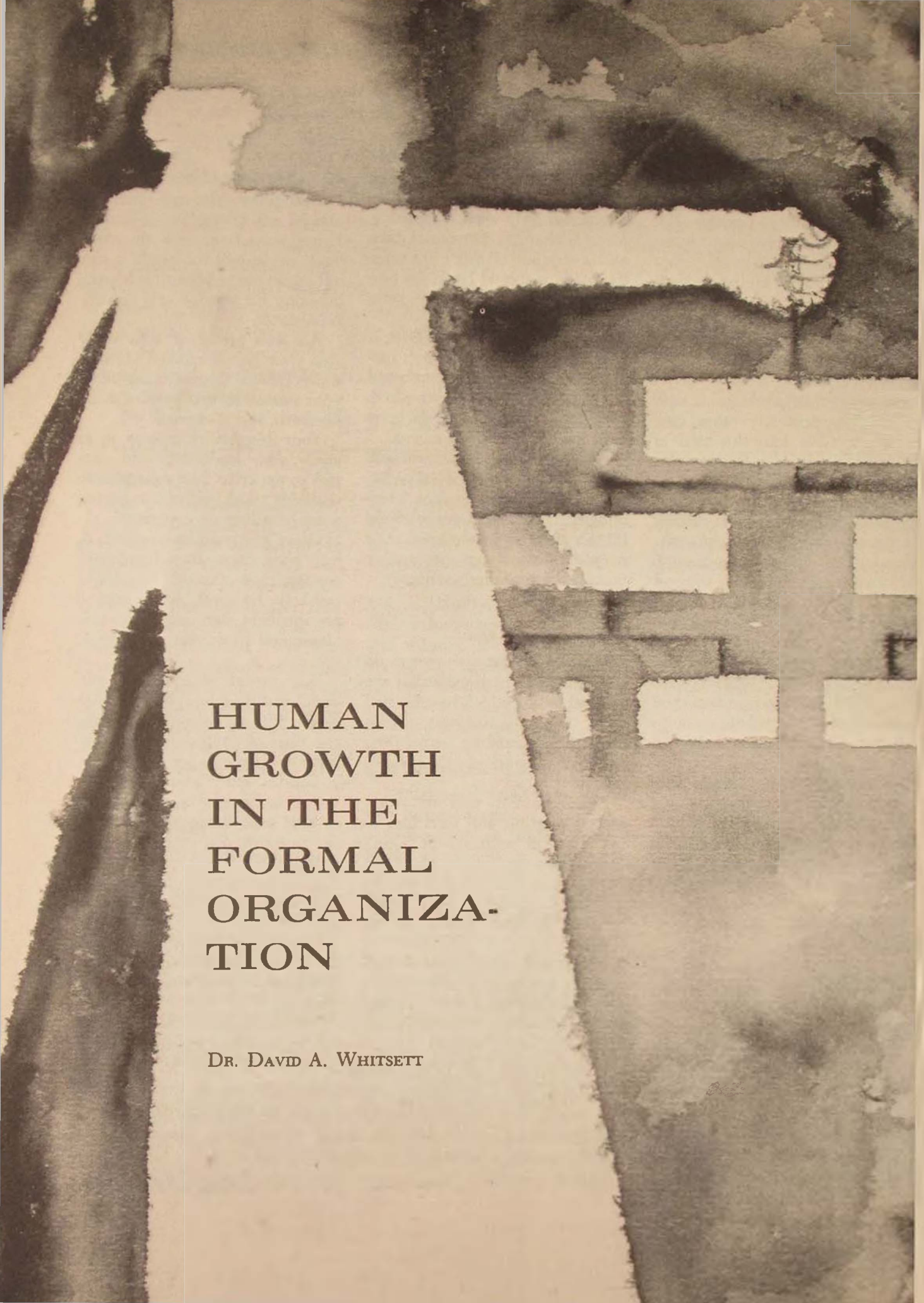
Be careful of criticism and avoid instilling fear. Fear is nonproductive and caustic. It erodes the fiber of initiative and eliminates the urge to try.

Know what your manager hopes to acquire and help him to that end. Recognize his need for support. Aid him when and where you can.

Provide access to training and education. Assist him in improving his position in life and his personal capability. Encourage his efforts to improve and learn. His improvement also reflects on you.

THESE thoughts are not oriented to immediate results. Their application requires conscientious consideration and patience. It may take months (years, in some instances) to see the results, but they'll be there. In most instances you should note better individual performance within days if you insure full understanding of your intent by each of your subordinate managers. Most of them are at this moment itching for the chance to really do their job if you will let them. Give them the reins and watch their capability grow.

Air Force Institute of Technology



HUMAN GROWTH IN THE FORMAL ORGANIZATION

Dr. David A. Whitsett

SOME OF the current management and organization theory is directly concerned with the growth and development of people and with the organizational conditions that foster or inhibit this growth. This body of theory has particular relevance to the United States Air Force. Since much current management and organization theory is based on more general psychological concepts, what I have to say will be clearer if I begin with a couple of these concepts.

There was a long period of time when most psychologists conceived of human beings as motivated solely by their need to reduce tension or discomfort. For example, man has a need to eat, and if not served in a reasonable period of time, this need leads to tension or discomfort; the man is thus motivated to get food in order to reduce this discomfort. At one time all of man's behavior was explained according to this concept and in terms of the tension-reduction model of motivation. This model pictures man as a creature who seeks to maintain a state of equilibrium through reduction of incoming stimuli; i.e., with this model man is seen as an organism that is characterized primarily by avoidance of discomfort.

However, during the last several decades psychologists have found more and more evidence that leads us to believe that the tension-reduction model, while correct, explains only a part of human behavior. Some human behavior seems to be of a tension-seeking rather than a tension-reducing nature. That is, in some situations the healthy human organism seems to be characterized by a kind of approach behavior, as opposed to avoidance, in which he is seeking to increase the amount of tension (stimulation) that he is experiencing. In such situations man is often trying to learn or grow in competence, i.e., he is seeking challenge. It is this kind of behavior which we will be discussing in this article—man's need to "self-actualize"[1] or fulfill his potentialities, to become the most that he is capable of.

Let us first discuss the ways in which men want to grow and develop and then examine the structure of formal organizations, such as the Air Force, to see whether they foster or inhibit growth and development.

man's growth toward independence

For our purposes, let us define man's growth as "movement in the direction of the fulfillment of his potential." Then a prerequisite to an understanding of the concept of growth is an answer to the question, What are man's potentials? It is certainly not within the scope of this article to delineate a complete answer to this question; but by making use of a system developed by Chris Argyris, I will attempt to outline a general conception of the continua along which man develops his potentials.[2] Argyris's work is a particularly good choice for our purposes here for at least three reasons. First, it should be generally representative, since it constitutes a confluence of the work of many other theorists from whom Argyris has drawn, including Erikson, Brofenbrenner, White, Lewin, and Rogers.[3] Second, it is very clearly organized and stated. Third, and perhaps most important, it is particularly relevant to the Air Force because Argyris later applies it to formal, structured organizations.

Argyris views man's growth as consisting of a group of developmental trends:

(1) a tendency to develop from a state of passivity as an infant to a state of increasing activity as an adult,

(2) a tendency to develop from a state of dependence on the environment as the determiner of behavior to a state of independence of such influences,

(3) a tendency to develop from being capable of behaving in only a few ways to being capable of behaving in many different ways,

(4) a tendency to develop from having erratic, quickly dropped interests to having deeper interests,

(5) a tendency to develop from having a short time perspective to having a much longer time perspective,

(6) a tendency to develop from being in a subordinate position in the family and society to aspiring to occupy an equal or even superordinate position,

(7) a tendency to develop from a lack of awareness of self to an awareness of self and control over self, i.e., control over the outcome of one's effort through self-determination.[4]

The central idea running through all these trends is development from passive dependence to active independence with respect to the environment. This point should be obvious in numbers 1, 2, 6, and 7. Number 3 implies independence through developing competence[5] or mastery over the environment. Number 4 implies independence through development of more permanent involvements that are less subject to changing environmental conditions. Number 5 also implies independence through development toward a state of being less time-bound and, thus, less dependent on present environmental circumstances. Argyris is certainly not alone in this emphasis. Many other theorists have also emphasized the importance of growth toward independence and autonomy in man's development: for example, Erikson, Allport, Adler, Murray, Rogers, Horney, Freud, and Jung.[6] More recently (1966), Herzberg also emphasizes that growth toward independence is man's natural bent when he writes, "One of the highest levels of psychological growth is becoming an individual—desocializing and separating the individual from his environment, as his organic condition suggests is a natural thing to do."[7] Thus a major theme in this body of theory is that man desires growth in the direction of increased independence and autonomy. In order to relate this concept to the job situation, we must examine the importance of work as a vehicle to growth.

the importance of work to growth

What is the role and importance of work in man's growth and development? For purposes of this discussion, "work" means a meaningful task (i.e., meaningful to the worker) that provides him an opportunity to achieve psychological growth, to become more competent.

Gurin, Veroff, and Feld concluded from their nationwide survey of Americans' development:

> Much of man's life is spent at his job. Potentially, a man's work may be the focus of his identity, his social status and prestige, his feelings of masculinity, worth and competence.[8]

Thus, a man's work is very often the vehicle through which he must achieve his independence, his competence, and his growth. We in the Western Hemisphere have made meaningful work increasingly important to feelings of independence by placing heavy emphasis on a man's job as a measure of the worth of the man. The widespread degeneration of the self-concept of the American Negro male (which has resulted in large part from his extremely limited job opportunities) attests to this fact. Thus, work comes to mean "having a purpose, gaining a sense of accomplishment, expressing oneself."[9] Without the opportunity to experience such feelings, it will be difficult or impossible for an individual to grow towards independence. I am not saying that work is the only route to growth, but in our industrialized culture, work is likely to be the best way for an individual to gain a sense of accomplishment, express himself, and achieve a feeling of independence and autonomy. As Harry Levinson has said, "Work becomes a fundamental resource, something to hold onto as long as possible. It is a psychological glue which often holds a man together."[10]

The fact that many individuals spend a sizable portion of their lives in educating themselves to work is an important consideration in the relationship of work to growth. During these years of preparation, the individual has presumably acquired considerable potential, which he hopes to utilize. If he is not given an opportunity to do so, we may assume that this potential will not be fully developed and that the individual's growth will be blocked. What conditions might cause this blocking to occur? The most likely reason

would be that the individual finds himself in an environment which provides no opportunity to develop his independence and autonomy, an environment which provides no vehicle for growth.

Is it not possible that formally structured bureaucratic organizations (e.g., the U.S. Air Force) tend to inhibit man's development toward independence by providing no vehicle for growth?

growth and the modern formal organization

For purposes of the article, growth is considered a kind of definition of mental health in the sense that mentally healthy people are growing in the direction of independence and autonomy. Let us presume that organizations want their people to be mentally healthy and that there will be some generally accepted idea in an organization of what "healthy" behavior is like. I think there is an implicit assumption in our modern formal organizations that mentally healthy behavior is embodied in the ability to adjust to one's environment, and I think this assumption has led to inadequate opportunities for growth and development of men on their jobs. I say this because "growth" as I use the term here and "adjustment" as it is thought of in formal organizations are completely contradictory ideas.

In the context of the formal organization, the "good" employee is the one who most closely fulfills his job specifications and job description, and the requirements of the task become the major criterion for judging the worth of the individual. To the degree that an employee conforms to the requirements of the job or "adjusts" to the situation, he is "job adjusted." If he is unable or unwilling to fulfill the requirements, he is "maladjusted to the job."

It is generally assumed that it is the employee's responsibility to adjust to conditions as he finds them. Admittedly, management has been devoting a tremendous amount of time and money to providing a more comfortable environment—witness the human relations movement. But this movement itself is a result of management's desire to change people's attitudes, sell them free enterprise, and make them more interested in the organization. That is, even these human relations gestures are attempts at inducing the employee to adjust to his work environment. If we apply this practice to the Air Force (and my observations lead me to believe that it applies quite well), I would say that the man who is valued as a "good" Air Force man is one who meets the requirements of his position by adjusting as necessary. That sounds very positive, but what is implied is that the man is expected to accept conditions as he finds them and somehow mold himself to conform to these requirements.

In business and industry, studies of middle management executives (who correspond roughly to majors and lieutenant colonels) show that the ability to adjust to company requirements, to be a "good soldier, a loyal, hard-working company man," is considered very important by most organizations.[11] I am suggesting that the tendency of the organization to require people to adjust to conditions as they find them, to do things according to rules and regulations, and to function within the somewhat narrow confines of their position descriptions runs counter to their healthy development toward independence and growth. I am also suggesting that this problem is a direct result of the formality of the organizational structure. Again, we can refer to Argyris's work for an explanation of this point.

Argyris feels that "the most basic property of formal organization is its logical foundation or, as it has been called by students of administration, its essential rationality."[12] The organization has been conceived and built to serve the intended purpose of its creators, and, as Argyris points out:

> The underlying assumption made by the creators of formal organizations is that man, within respectable tolerances, will behave rationally, i.e., as the formal plan requires him to behave.[13]

Argyris feels that this creates an inherent conflict between the needs of the individual and those of the organization. That is, since the

organization requires that the man be dependent and his natural tendency is toward independence, a conflict results.

Ohlin feels that, through sheer size and complexity, organizations often require their members to become increasingly dependent on one another for the achievement of personal and organizational success. He feels that such dependency is inherent in large organizations because of the principles by which they are constructed.[14] Some of the basic principles of formal organization that have application in the Air Force are:

> (1) *Chain of command.* This is the "leadership" principle that is utilized to give control, direction, and coordination to the organization members. It creates a directive hierarchy of authority. This principle is, of course, basic to all military organizations.
> (2) *Task specialization.* This is the principle that organizational and administrative efficiency is increased by the breaking down of tasks into well-defined, repetitive elements. It has led, in its most extreme application, to the automobile production line. It is widely used in the Air Force.
> (3) *Unity of direction.* This is a logical derivative of the task specialization principle, i.e., it dictates that each unit shall have a single activity (or homogeneous set of activities) that is planned and directed by the leader. In the Air Force, this is expressed as the "mission" of a unit.
> (4) *Span of control.* This principle states that maximum administrative efficiency can be maintained by organizing the work force in such a way that no more than five or six members report to a supervisor. This leads to a very "tall" organization, having many levels of authority, which is descriptive of the Air Force.

According to Argyris:

> If the formal organization is defined by the use of such organizational principles as task specialization, unity of direction, chain of command, and span of control, and if these principles are used correctly, the employees will work in situations in which they tend to be dependent, subordinate, and passive toward the leader.[15]

I have certainly seen many Air Force officers behave in this way in the presence of their superior officers. It is obvious that these principles offer the worker very little control over his working environment. Super discusses the importance of such control to a man's feelings of independence, pointing out that to any man, whether in a factory or an office, independence means freedom to control the pace of work, freedom from close supervision, and freedom to express opinions concerning the work being done or to be done.[16]

the blocking of growth

One of the most damaging results of the use of these principles of organization is that the roles which people are required to fill are very clearly defined in terms of the behavior called for. Willis has called this process of standardization of behavior "psychomation."[17] He points out that if psychomation were carried to its logical extreme, the individuals occupying the various positions in the organization would make no unique or special contributions and individuality would be diminished to the vanishing point. He concludes that, with complete psychomation, if we make the assumption that all members of the group are equally capable of playing any role, there will be perfect interchangeability among individuals. Willis obviously does not believe that this will ever happen, but he does make the point that psychomation, in its milder forms, is common in formal organizations. And he observes that "the conforming, dependent Yes-man is the preferred type in such situations."[18] Once again, I have observed this to be true of many situations in the Air Force.

Thus, the overdefinition of roles through the use of formal organization principles leads to partial utilization of abilities and, thus, to the blocking of growth.

Gillespie has suggested that the roots of these organizational principles can be traced back to the basic economic assumption that "the concentration of effort on a limited field of endeavor increases quality and quantity of output."[19] Herzberg traces the "system of utilizing only the lowest common denominator in the catalogue of ability" to Frederick Taylor's

theory of scientific management.[20] Herzberg suggests that the essence of industrial engineering, which is the basic discipline of scientific management, is to remove the effects of one of the most important laws of psychology, the law of individual differences. That is, industrial engineering assumes that the most efficient procedure for organizing work is to structure and limit the task performed by each man so as to reduce both the possibility of error and the cost of training and retraining. Herzberg says the result of "using only the minimum in a man's repertory of behavior was, in a sense, the amputation of the rest of his capabilities."[21]

Argyris has been very much concerned with his findings that organizations tend to allow employees to use very few of their abilities. He also finds that those abilities which are used tend to be the ones with limited potential for providing a feeling of accomplishment and success. He writes:

> Most human problems in organizations arise because relatively healthy people in our culture are asked to participate in work situations which coerce them to be dependent, subordinate, submissive and to use few of their more skin-surface abilities.[22]

Ohlin agrees that human problems are multiplied in situations where the division of labor and specialization of tasks are greatest. White has suggested the importance to man of what he calls the "competence" motive or the need to achieve mastery over the environment, to become competent at a task. It is obvious that this motive is receiving very little attention in situations like that I have described. These authors point out that many formal bureaucratic organizations have structured jobs in such a way that there is little or no opportunity for the employees to "grow," to be independent and autonomous, and to develop their potential by using all their abilities.

Argyris suggests that as we go down the chain of command we may expect to find less and less opportunity for independence, growth, and autonomy. He asserts that at all levels, particularly the lower ones, "healthy individuals will tend to have their self-actualization blocked or inhibited because of the demands of the formal organization."[23]

effects on personnel

What are the results of this blocking of self-actualization? What happens to people whose natural potentials are not allowed to develop? One thing that happens is that they leave the organization. I believe that the retention problem in the Air Force can be traced in large part to the problem I have been describing. Morse suggests that there are two other possible avenues to be taken by a man who has certain aspirations that are not fulfilled by his environment over an extended period of time. First, he may continue to aspire and actively seek those objectives he has always held (i.e., he may continue to seek independence and growth), in which case he will not make such a good "adjustment" on the job. His other alternative is to resign himself and turn to other or more modest aspirations, in which case he will presumably eventually become well "adjusted" to the job situation.[24] Argyris suggests that such resignation often takes the form of an increased emphasis on the monetary return for work. That is, although he feels that the employee is still a complex organism seeking growth, he says:

> It is precisely because he is not permitted truly to actualize his potential that he makes a decision to "simplify" his personality, making money and other material factors most important.[25]

Thus, another result of the blocking of growth may be an increasing tendency on the part of some of the people to emphasize the environmental aspects of their work situation to the exclusion of satisfaction derived from the performance of the task itself. Many of the people (particularly those to whom independence is especially important) will experience a great deal of frustration if their needs for growth are not met by their jobs. This will be true in jobs which are repetitive and/or in which required rules and procedures restrict an individual's opportunity for independent decision-making. As a result of this frustration people often begin to be more demanding con-

cerning the conditions under which they are required to work. They are saying, in effect, "If you can't give me something interesting and challenging to do, at least make me comfortable while I'm being bored."

Demands to be made more comfortable may take many forms. They may be expressed in terms of demands for improvements in actual physical working conditions, such as improved working hours, better lighting, or better heating and cooling. They may also take the form of requests for more money (i.e., "reimburse me for my frustrations"). Sometimes this tendency takes the form of increasing emphasis on the social aspects of the job situation; the man may begin to consider it more and more important to establish and maintain good interpersonal relationships with others. Lieutenant Colonel Robert Drumm has suggested that this may be particularly true of the "older generation" of Air Force officers.[26] If an individual's task does not afford him some satisfaction, he will look for satisfaction in the environment in which he performs the unstimulating task; and since a comfortable environment does not give a feeling of accomplishment (which is what he really wants), his demands will be insatiable.

A number of studies have found that long-term blocking of growth often results in employees' losing initiative and becoming passive, dependent, and resigned to their fate. Ghiselli, for example, found that initiative among line workers dropped off sharply with increasing age.[27] Chinoy also found that as workers get older they realize there is no future for them, begin to accept their fate, and cease fighting the job.[28] I believe that what happens is that they just plain get tired of "fighting the system," succumb to the endless regimentation and bureaucracy, and look elsewhere for their satisfactions in life. Such people are not very productive workers and are certainly not happy, fulfilled individuals.

What can be done?

I have suggested that highly structured formal organizations often lead to tasks which people find uninteresting and unchallenging and that this situation may lead them to leave the organization or, if they stay, to place increased emphasis on material rewards and conditions surrounding their tasks and ultimately to poor work performance.

The task of improving work performance and, at the same time, contributing to the employees' feelings of satisfaction and accomplishment is a very difficult one. However, current research and application in the behavioral sciences can provide some answers. A clue to the answer may be seen in a slight modification of the oft-quoted phrase, "Any job worth doing is worth doing well." If we change it to read, "Any job not worth doing is not worth doing well," we may understand why poor work performance is so often obtained on uninteresting jobs. It seems quite unreasonable to me to provide a man a boring, repetitious, or unchallenging task and then expect him to put forth maximum effort in carrying it out. His thought must be, "It's not worth doing, so why do it well?"

I do not mean to imply that this is the case with most of the men and jobs in the Air Force, but I think we can be certain that it is true of many. Most efforts to remedy this situation, both in and out of the Air Force, take the form of improving the conditions surrounding the task. That is, we try to offer people improved working conditions, security, perhaps some status, etc., in the hope that they won't notice that their tasks are still boring and unchallenging. Such attempts generally result in short-term improvement in productivity and attitude, but the situation returns rather quickly to normal.

The solution lies in the realization that it is the task itself which needs to be changed. If a man doesn't like the lighting in the room where he works, improve the lighting; but if he doesn't like doing the task he is assigned, don't expect better lighting to make him like it more. He may be able to see it better, but he will not like doing it any more than he did before. You have got to make the task more interesting.

It is man's inherent need to grow and develop toward independence that we must serve when we attempt to make his task more inter-

esting. This has been done by building into tasks more opportunities for people to achieve, to gain recognition for that achievement, to be responsible (i.e., make decisions), and to learn new skills.[29] When we have provided such opportunities in jobs, the results have been that job performance improved and the people involved were much happier with their jobs. In the studies we have conducted to date, these improvements have been of lasting duration.

This approach, which is called job enrichment, is not the answer to all management problems, and it is certainly not the only valuable concept that current behavioral science thinking has to offer. It does, however, provide a viable answer to the particular problem we have been discussing here, i.e., poor work performance and job attitude resulting from overstructured situations. Colonel Drumm implies that this may be an increasingly serious problem in the Air Force with the expanding "generation and value gap." He suggests that this need to grow and develop in competence may be more important than ever to the young officers now entering the Air Force, and I agree with him. If we are correct, the ability of the Air Force to provide meaningful, challenging assignments for these men may make the crucial difference between their being retained or being lost to the Air Force.

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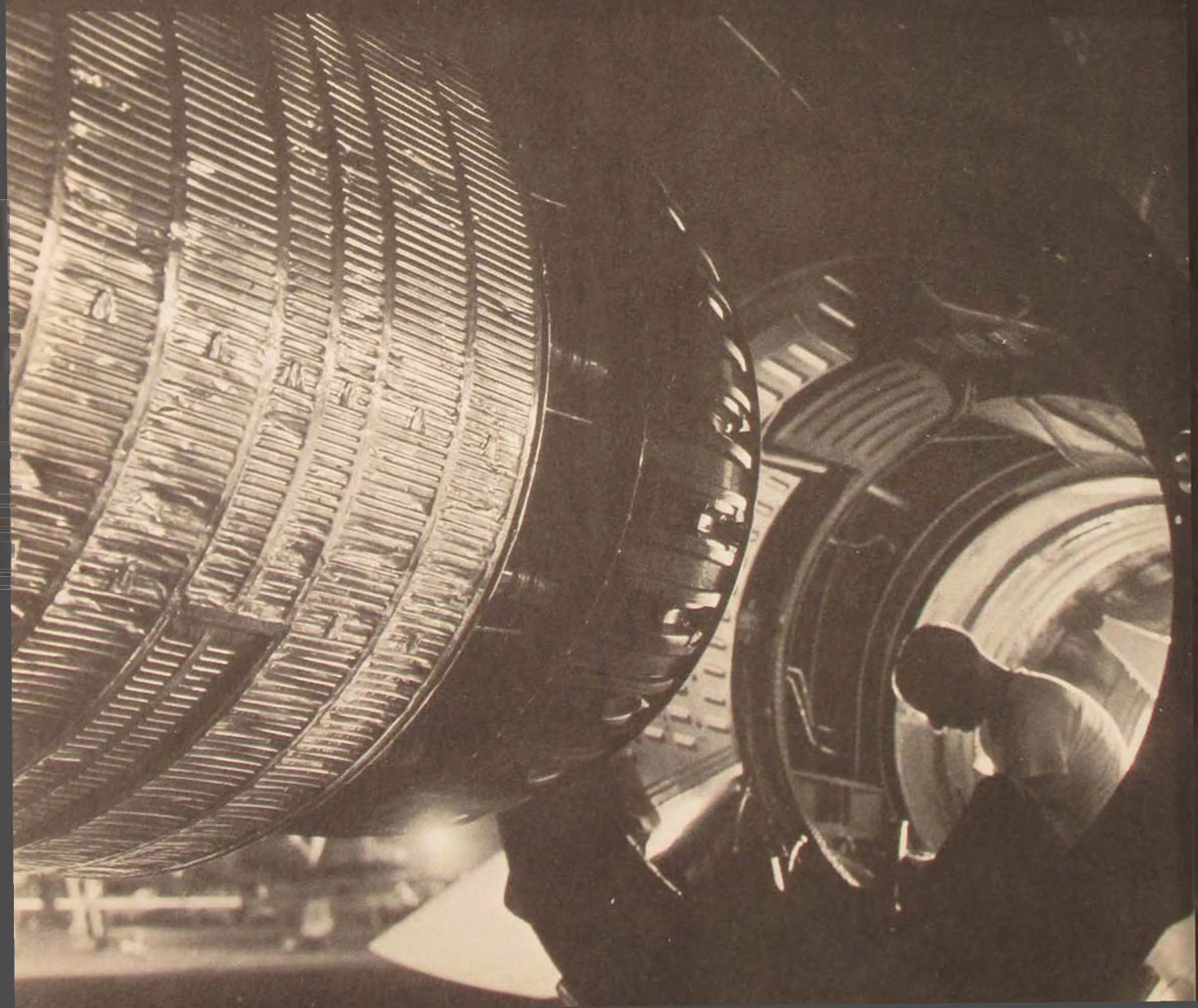
THE MILITARY COMMANDER AND MAINTENANCE MANAGEMENT RESPONSIBILITIES

LIEUTENANT COLONEL WILLIAM J. DESS
MAJOR ROBERT W. KUNSTEL



THE military commander's occupation is unique in that he must be a commander as well as a manager. He has total responsibility for his personnel, their performance on the military job, and their conduct and performance standards in both the military and civilian society. A commander may at times be required to exact performance that a manager need never anticipate: performance demanding an individual's life.

Agreement can be readily achieved concerning the many responsibilities of command, but it is usually difficult for the commander to identify and define his maintenance management responsibilities. To help the commander, the authors propose that the means of solving these difficulties can be obtained by a systematic approach to answering the question, "What do I need to know?"

This question is the basic maintenance management problem of the commander. He usually puts it to his maintenance manager (or maintenance analyst) and either receives a response limited to the latter's concept of command or is asked in return, "What do you want to know?" The resultant impasse creates confusion, doubt, and poorly defined requirements. An impasse need not exist, however, because the commander can determine the answer to his question—"What do I need to know?"—by using a systems approach to maintenance management. By using this approach he recognizes that maintenance as a system is a "complex of elements standing in interaction."[1] This concept recognizes that management must not attempt to set formulas for treating each item of the host of elements making up the maintenance complex but must first determine what the system is and what part each element plays in that system. The concept also recognizes that the interaction of the elements is dynamic and that the movement and change of this interaction constitute a problem not solved with fixed formulas or fixed responses. The systems approach thus identifies the "big picture" in maintenance management and then breaks down each part of the system into logical, interrelated components. This permits treating each bit, part, echelon, or structure with appropriate attention and concern. As a result, the commander will be in a position to determine and decide what his own requirements are and what he needs to know. He can make these decisions without rushing up blind alleys or giving inordinate time and energy to minor irritants—the actions indicative of one dealing with symptoms rather than problems.

A "big picture" or systematic review of maintenance management must begin with the identification of a maintenance program and objectives at the highest or Department of Defense level. This will serve as a guide for determination of the commander's position in the maintenance program, and the commander can identify his own objectives within the overall DOD objectives. He can thus also accomplish a basic management requirement: the establishment of objectives. The establishment of objectives will enable the commander to delimit his basic question to "What do I need to know to meet these objectives?" The knowledge of the overall maintenance management program will also establish the basis for the commander's evaluation of his own maintenance accomplishments.

The DOD maintenance program, which has been developed and the revisions projected, covers a broad range of requirements aimed at insuring effective maintenance management and provides the means for improved efficiency in that management. The program is expressed in statements of concept, DOD directives and instructions, and many separate papers; but for this article all the published material can be reviewed and summarized in three statements of basic policy:

• Military hardware is the source of maintenance requirements and the sole basis for the establishment and retention of a maintenance capability. The output product of maintenance is mission-ready end-item equipments (weapons/support systems). Maintenance management objectives and emphasis must therefore be oriented toward end items or systems as contrasted with homogeneous

commodity groupings of hardware associated with many end item equipments, or purely an organizational or functional approach.[2]

This statement emphasizes that military hardware establishes the need for and justifies the maintenance function. Because the hardware is of paramount importance, the attitude toward maintenance and maintenance management must be one that makes decisions to support the hardware required for mission accomplishment. Personnel must be provided in numbers and skills to meet the hardware requirements, not to supplement ground-keeping chores or conform to a fixed ratio of X number of 7 levels to Y number of 5 levels, or to "Do it the way we did with B-17s." The management organization and levels of authority must be those which will provide for the designed performance of the hardware. Maintenance organizations, policies, and procedures must be structured to support the mission effectiveness and insure effective and efficient use of resources.

• Meaningful system management requires knowledge of total maintenance demand and resources applied since there is a continual shifting of demand and effort between the various levels of maintenance support.[3]

This is a corollary of the first statement of policy. When military hardware is considered in the end items/systems concept, there is an obligation to develop a maintenance management system that provides complete and current experience information on the systems hardware, and there must be a continuous interchange or flow of information through and between all levels of maintenance. Obviously if at an organizational level a capability is gained or lost, there is a reaction upon the next level (field or intermediate) and the third or depot level. Consider the impact if, within a system, a component was designed for complete maintenance at the user or organization level, and then the organizational commander decides to ship to the depot a large accumulation of the items requiring maintenance. Where would the manpower, supplies, tools, fixtures, etc., come from to meet this demand? The depot would have—theoretically, at least—scheduled all of these resources for other work. Disruption also occurs if work was to be done at depot level and the lower-level command or maintenance unit arbitrarily determines that it will do the required repair.

Managers or commanders at any level must know that decisions involving maintenance cannot be accomplished at any one level in isolation. The dynamic forces must be recognized; and at the very minimum, when action is contemplated concerning the maintenance management of a part of a weapon system or a part of the maintenance management system, the commander should ask for information relative to the impact of his decisions on the total system.

• In the final analysis, maintenance effectiveness and efficiency must be adjudged on the basis of ability to sustain established end items or weapons/support systems "equipment readiness" goals at the least cost.[4]

Maintenance management may be inspected for its clean shops and its ability to plan and schedule and to fully employ assigned personnel. However, the ultimate question, which—paradoxical as it may seem—should be the first question, is: "Does maintenance produce the standard of equipment readiness that meets programmed operational requirements?" Regardless of the many yardsticks available, the final evaluation as to whether or not maintenance is effective will depend upon the answer to that question.

The DOD program has thus established the logic sequence that military hardware determines the basis for maintenance, that maintenance management must manage on a weapon/support system concept, and that the prime evaluation of maintenance is based on its ability to provide mission-ready systems. Once effectiveness has been determined, the cost of the resources expended to accomplish the attained state of readiness must be determined. Thus, maintenance efficiency can be expressed in terms of cost per hour of operation of the weapon/support system, or cost per hour of availability, or cost per hour of readiness,

compared to acceptable cost standards for the condition, use, or availability. Briefly, first be effective, and then determine the efficiency or cost of being effective.

maintenance management information needs

The sequence of management logic now leads to the inescapable requirement for information by which the effectiveness and efficiency of maintenance can be measured. The DOD maintenance program identifies the basic information needs for maintenance management as: (1) Equipment Inventory and Readiness Data, (2) Maintenance Performance and Management Data, (3) Maintenance Cost Information, and (4) the Depot Maintenance Program and Production Data.

It is within these information systems that the commanders and maintenance managers have the data to answer questions and provide the information base for decisions. It is also unhappily true that the available data have many times developed into a mass of material whose sheer volume and ways of presentation tend to overwhelm the individuals concerned or to confuse or hide real issues.

This problem of "mass" information is a major one that the commander and his maintenance managers must solve. They cannot at all times use all the information, and in some cases they need only occasional reference to some of the data. Of the four information systems listed, for example, the tactical commander may have very rare occasion to delve into the Depot Maintenance Program and Production Data. He should know, however, that all these systems will at one time or another have an impact upon him and his mission. It is in recognition of this problem of selecting the data to answer "What do I need to know?" that these information systems are reviewed. A systems or logic approach can show the relations of the systems to each other and to the commander, which is better than attempting to "put out fires."

maintenance performance and management data

The commander of an aircraft unit should have knowledge of the technical (performance) and production aspects of the equipment given to him to perform his mission. The maintenance data collection (MDC) system (AFM 66-1, Chapter 9), originating at base level and flowing through all levels of command, provides these answers, and a review of the highlights is necessary to answer our question, "What do I need to know?" A lengthy discussion of who does what is not necessary, but the significant features of the system can be presented. Figure 1 illustrates an analysis pattern of how a commander may use maintenance data.

Maintenance data, recorded by the mechanic, provide the commander with the man-hours spent in production to support a flying-hour program, the causes for that maintenance effort, and what equipment or part caused the expenditure. The data also identify the malfunction, when maintenance need was discovered and by whom, parts used, and maintenance actions that occurred.

The maintenance data system, by showing how many maintenance hours were expended for a type of equipment, pinpoints how these hours were spent (Item B, Figure 1). Maintenance falls into two broad categories: *scheduled*—those scheduled maintenance inspections as specified in the inspection manual applicable to the equipment (Item D, Figure 1); and *unscheduled*—all work accomplished on equipment or components except scheduled maintenance, servicing, cleaning, and movement[5] (Item C, Figure 1). The relationship of these man-hours indicates the effectiveness of workload planning and surveillance by the maintenance personnel over their troublesome systems or subsystems. There will always be unscheduled maintenance because things will break or wear out. However, the relationship of scheduled to unscheduled maintenance for the type of equipment should be established. Generally, a ratio of more than 50 percent unscheduled to scheduled maintenance may be a problem, caused by ineffective periodic or phase inspection, training problems, improper workload schedule, or failure to recognize significant nonmaintenance factors such as inadequate design criteria or operational abuse of equipment.[6] As a minimum effort, the commander should investigate increasing

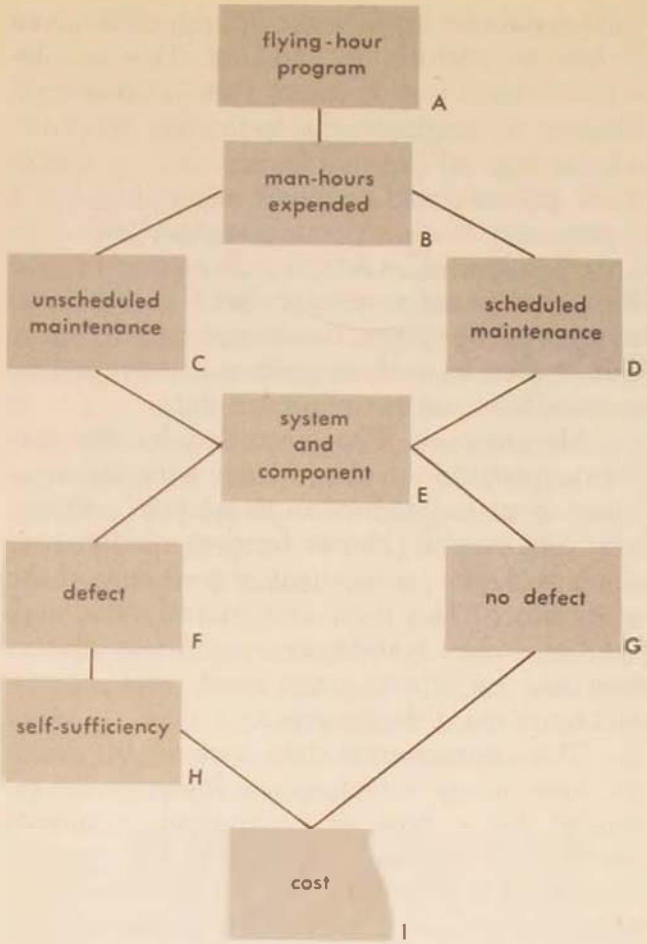


Figure 1. A logic path for using maintenance data

ratio trends in this area as a means of anticipating or avoiding problems.

Within the category of unscheduled maintenance, it should be determined which equipment systems or components are problems (Item E, Figure 1). The analysis section in the maintenance organization can identify the systems or components causing problems. Analysis can depict high consumption of man-hours, frequency of malfunction, and when the malfunctions causing aborts or removal from operationally ready status can seriously affect mission capability.

When a problem system is identified, the commander should know what the maintenance managers are doing to solve it and whether the problem is local or Air Force-wide. The major command and the Air Force Logistics Command System Managers (SM) or Item Managers (IM) can help in this regard. From the data created at base level and forwarded to AFLC, a series of monthly reports known as the K-260 series is provided the SM/IM and major commands on all end items of equipment. Local commanders have to ask the questions, but the AFLC data bank provides data in depth that should answer any question asked. If there is a Weapon System Liaison Officer (WSLO) on base, he should get the answer. His job is to help, as an extension of the Air Materiel Area (AMA) responsible for logistics support of the type equipment at the facility.

Another assistance for answering problems is the AFLC CO 26 Report (Materiel Improvement Project Index and Status Report). This report is provided by the AFLC System Managers to all major commands and directly to some bases upon command approval. Problem systems that have been identified and analyzed anywhere in the Air Force are listed in this report. Action agencies for correction of problems, target dates, and other information are spelled out. If any base maintenance personnel have initiated an Emergency Unsatisfactory Report (EUR) and a project has been established to correct the deficiency, it will also be contained in the CO 26 report. Knowledge and use of this report can save a local commander a great deal of time and trouble, for a problem new and perhaps considered unique by him may already have been identified elsewhere and a solution determined.

Another major concern of the commander involves expenditure of maintenance man-hours on malfunctions which are finally classified as "No defect" (Item G, Figure 1). The importance here is the expenditure of resources for no apparent need. This problem occurs with both the equipment/systems and the supporting shops maintenance. It could be an operator problem, caused by his lack of understanding of the system, or it could be a maintenance problem.

Thus far we have traced a logic path (Figure 1) from flying-hour program evaluation to maintenance man-hours expended, whether for scheduled maintenance or un-

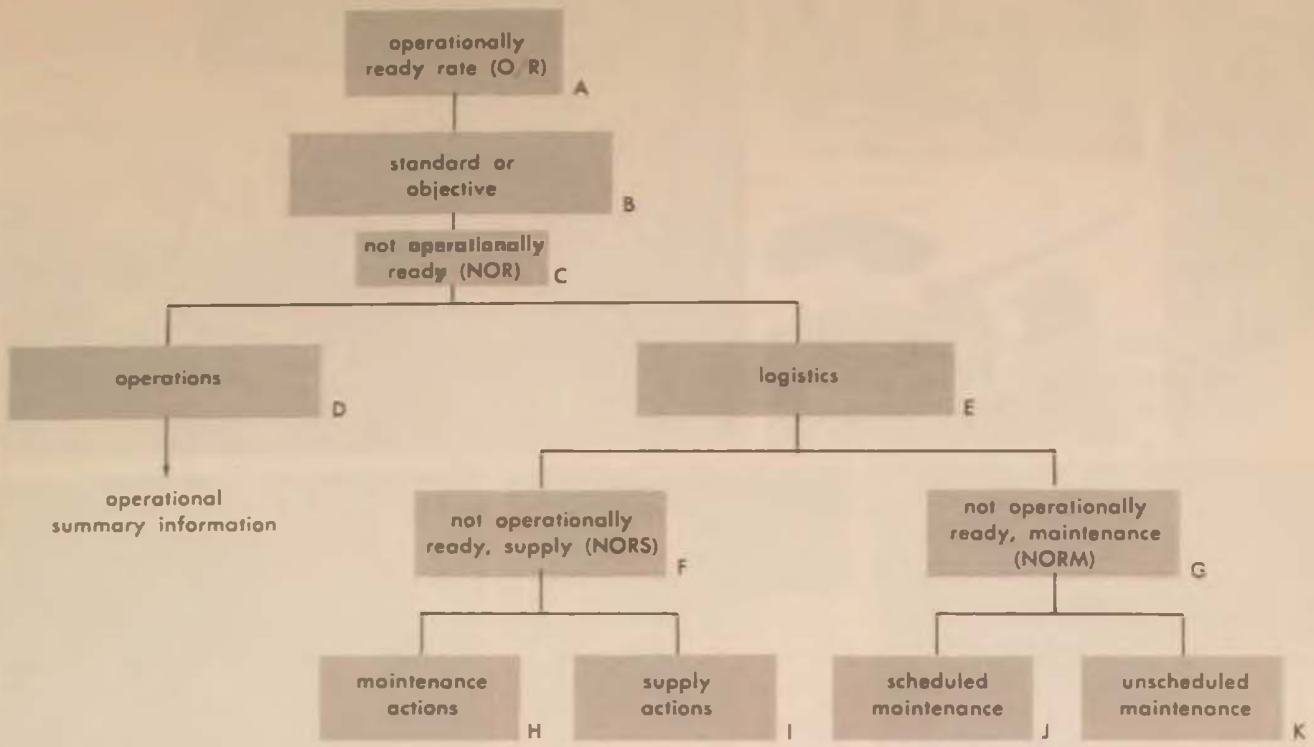


Figure 2. A logic path for using equipment-readiness data

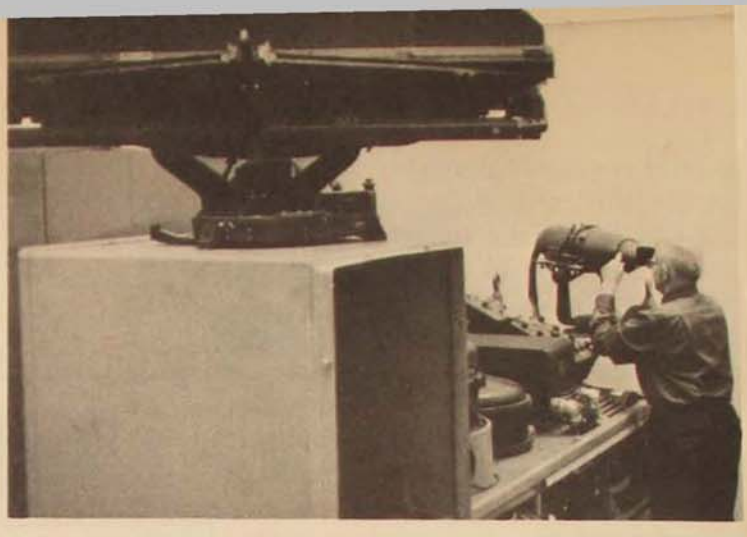
scheduled maintenance, and then to determination of validity of reported defects in a component or part.

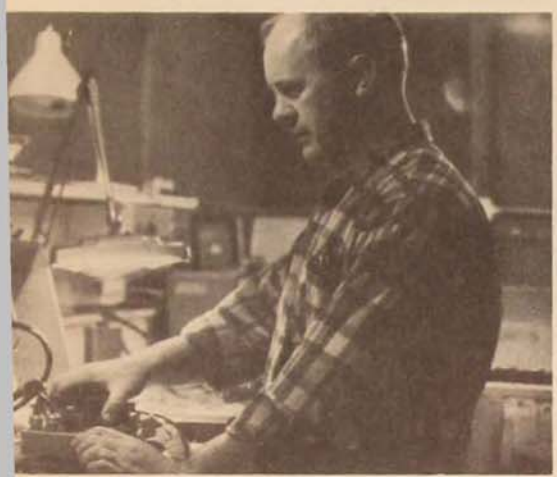
The next item to consider is the repair of the "broken" item. The commander should know whether items are repaired or not repaired and, if not repaired, the reason. This information is the essence of the status of a unit's "self-sufficiency program." The impact here is the question of utilization of available resources in relation to what an organization is authorized to repair, what the rationale is, and what actions the Repair Capability Evaluation Section[7] has taken on items that should be repaired by the organization. Base maintenance data provide the identity and quantity of items repaired and those condemned or shipped off base in the category of "Not Reparable This Station (NRTS)." Items shipped NRTS are also grouped into numbered categories or reasons for the NRTS action: i.e., "Repair Not Authorized," "Lack of Equipment, Tools, Facilities," "Lack of Skills," "Lack of Parts," etc. Specific attention should be given to what maintenance has done about "Lack of Skills," "Shop Backlog," "Excess Requirements," and "Condemned." Corrective action needed is then more readily apparent and local control more likely.

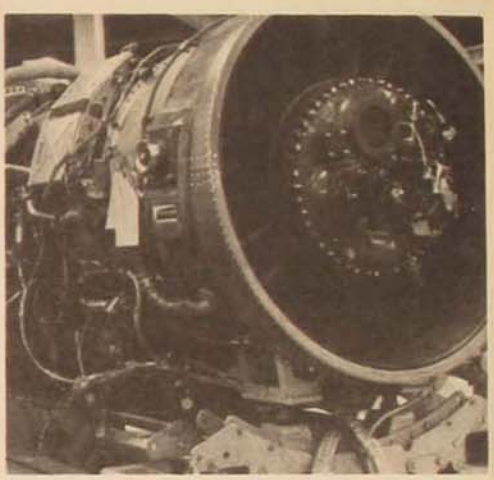
A commander can examine maintenance management actions relative to NRTS for a training program, proper shop scheduling techniques, whether or not equipment requirements are monitored, and whether or not proper condemnation procedures are in effect locally. The commander can expect more difficulty in eliminating problems with NRTS coded as "Repair Not Authorized," "Lack of Equipment," "Lack of Parts," and "Lack of Technical Data."

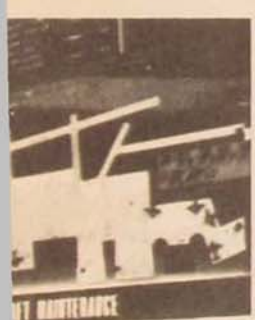
equipment inventory and readiness information

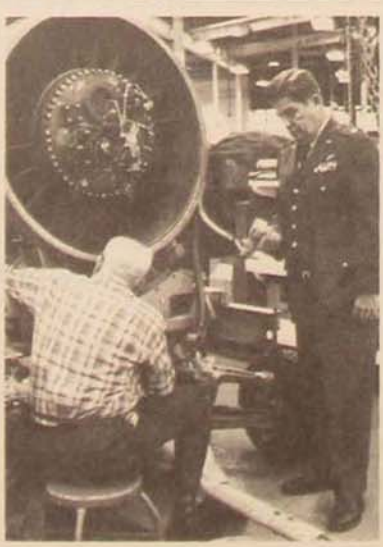
It was previously stated that in the final analysis, maintenance effectiveness and efficiency must be judged on the basis of ability











The multitude of materiel items—and the host of personnel who utilize them in support of a modern air force—may bewilder a commander when he first assumes responsibility for the maintenance function. But a systems approach to maintenance management will help in answering his question, "What do I need to know?"

to sustain equipment readiness goals at the least cost. In dealing with equipment readiness, the commander has the opportunity to establish objectives and develop a system of information to observe the effectiveness of the materiel maintenance function. What he needs to know about equipment readiness can be obtained by using a logic path or diagram such as was used to evaluate maintenance production. See Figure 2.

The readiness system has had a great deal of ground work already accomplished for the commander. Equipment readiness goals have been established for many items of equipment. For example, the readiness goal for aircraft is 71 percent of the number possessed. (AFM 65-110) The local achieved readiness rate can first be considered as a raw figure, for by itself it reveals little. When compared to a standard or objective rate, it answers part of the question "How am I doing?" If the local rate equals or exceeds the standard, there may be cause for some satisfaction. However, even this situation could be checked for a trend, to determine if the rate is getting better or poorer or is stable and an estimation of the likelihood of maintaining the position. Most of the problems arise if the local achieved rate is below the desired goal or standard. If this occurs, the local commander can trace what he needs to know in a systematic manner, as indicated in Figure 2.

Beginning with the comparison of achieved operational readiness (O/R) (Figure 2A) versus standard or goal, the first questions should be asked to determine which major area is a primary factor, logistics or operations. Operations areas should be considered to evaluate impact on O/R, and questions may be asked concerning any changes in commitment, requirements, tactics, etc. Usually a number of summary reports at every level will provide assistance in establishing which major area, operations or logistics, is primarily affecting the O/R rate deviations. (If operations is determined to be the major factor, the authors assume that the commander, who is normally from an operations background, can quite readily assess this area in his own way. The logistics area will be reviewed further.)

The logistics area can first be investigated to determine whether or not a "pure" maintenance impact has created the Not Operationally Ready (NOR) rate (Item C, Figure 2). An example of this would be the technical order requirement to perform a special time-consuming check of an aircraft component or system after each flight. The need to know is answered quite readily in a situation like this, and identification of the technical order as the "culprit" almost automatically establishes a course of action for the commander.

Usually a "pure" situation is not so readily revealed, and the need exists to investigate the interfaces and intermingling of supply and maintenance. At this point the need to know is whether it is a NORM (Not Operationally Ready, Maintenance) situation (Item G, Figure 2) or a NORS (Not Operationally Ready, Supply) situation. Either NORM or NORS can be reviewed in a systematic manner, moving from general queries to details. It must be emphasized that a great many false moves and ulcer situations will be avoided if the commander takes the logic sequence approach and goes from general to detailed analysis. To demonstrate this, the NORM situation will be developed first and then NORS.

NORM (Not Operationally Ready, Maintenance)

The first effort should be to determine whether or not it is scheduled or unscheduled (Items J and K, Figure 2) maintenance that is causing the condition. Scheduled maintenance should be a part of basic planning and

should be relatively stable. Changes in scheduled requirements have readily discernible impact, but obtaining such changes is a relatively long process. This article cannot attempt to go into further detail in this particular area. Locally available publications permit a review of scheduled maintenance, and the items requiring correction will normally require local staff review and then coordination with a depot-level staff.

It is in the area of unscheduled maintenance that further investigation and decision must be made. At this point in reviewing his "readiness" information, the commander is reviewing maintenance performance, and by recognizing this he is in a position to use a familiar logic path, the path described for maintenance performance and diagrammed in Figure 2. By entering the chart at the point "unscheduled maintenance" (Item C, Figure 1), the commander can continue on to determine the impact of maintenance performance on his operationally ready rate.[8]

NORS (Not Operationally Ready, Supply)

This area requires review of both maintenance actions and supply actions. In general, if the equipment operating performance has been steady or according to the planned or designed rates, and if supply quantities have been available according to the support plan, maintenance may actually be causing the NORS. This occurs when maintenance is either failing to repair properly or fails to meet repair priority requirements. The repair cycle assets information in Technical Order 00-20-3 should be utilized. If, however, NORS items are those for which a requirement has been relatively stable or predictable, and if there is still a NORS condition, then perhaps procurement or supply (distribution) is the basic factor. If NORS is due to a new or unique requirement, then both maintenance and supply should be checked for their ability to make a timely identification of the problem and to act, communicate, and coordinate to correct the situation.

A great many things may be discussed in this area, but for ready access to what must be done at this point a commander should confirm that his supply and maintenance personnel have procedural information such as that contained in Directorate of Supply and Services Newsletter, Hq USAF, Vol. V, No. 1, January 1967. The check list of NORS contained in this article is one of many that have been provided to help the commander direct and evaluate local investigations of NORS problems.

The preceding development of the Figure 2 operationally-ready-rate logic sequence provided a sequence for asking the specific question, "What do I need to know?" The sequence began with an objective (O/R), a measurement or standard. The action that evolved established a pattern of going from general to detailed question, all within a system and systematic review. By applying this same technique to all phases of his maintenance and supply responsibilities the commander will be in a position to achieve all his objectives better.

maintenance costs

The logical and mandatory extension of management action, once quantitative measurements of readiness, maintenance actions, and maintenance performance have been made, is to determine the cost of doing business. The cost consideration is mandatory, not because of DOD instructions or departmental regulations but because management must relate actions, resources developed or consumed, or almost any other aspect of maintenance to a cost basis. If this is not done, efforts to evaluate and compare the many parts of management effort will be like a continuous process of mixing "apples and oranges." In minimum terms, cost is the action of putting a dollar sign on a quantitative measurement and thus establishing a common denominator for all things managed.

Each command element should have an awareness of the operational cost of the assigned weapon/support systems for management guidance.

Measured cost, once effectiveness has been achieved (i.e., readiness), enables commanders to evaluate maintenance efficiency. If, for example, 75 percent readiness is achieved, what resources did it take to do it?

Was it necessary to expend overtime or hire additional personnel, or was there a more efficient way? Use of cost information, such as for comparing what it cost another unit to do the same job, provides for valid conclusions.

The maintenance resources required to maintain at any level must be considered in terms of cost.[9] This information can then be used to determine, for example, whether maintenance should be performed at organizational level or field (intermediate) level or if it should be transferred to depot level. Proper use of cost considerations makes for a valid base self-sufficiency interpretation. If, for example, maintenance on an item could be performed at field level with the purchase of a $60,000 test stand, a command could question the return for that investment. If, in turn, the questioning revealed that only two $10 items per year would be handled by that test stand, a decision to ship the two items to the depot would contribute most to overall improved maintenance efficiency.[10]

If the preceding discussion of cost information has a familiar ring, if it sounds like much of the Resources Management Concepts, it is because these maintenance management concepts of cost do fall within the concept of Resources Management Systems. In this respect the commander is fortunate, for the maintenance management information systems already provide quantitative information in a form and manner readily adaptable to computer use and conversion to cost data.

A COMMANDER and his staff can best accomplish their maintenance mission by a management process that establishes objectives within the framework and cognizance of the DOD maintenance management program.

This program is based upon the philosophy that military hardware is the source and basis for the existence of a maintenance capability and that the product of maintenance is mission-ready end items/systems. The systems concept permits establishing a concept of identifying and understanding the whole system and, within it, all interfacing or interrelating parts. The knowledge includes total knowledge of all the actions within the system, ultimately in real time as opposed to historical data.

The systems concept establishes the requirement for total knowledge of maintenance and maintenance management, and the key information systems were reviewed in this article. Proper use of the system is the systematic interrogation of data, beginning with measurement of achieved versus established quantitative objectives. The priority of management attention must be upon achievement of equipment readiness to meet operational objectives, and then these must be an accompanying measurement of efficiency. To measure the many varying factors concerned with maintenance, the manager/commander must employ the common denominator of cost, information. Cost data applied to quantified action data provide the measure of efficiency of the organization or function. The systematic tracing of objectives to effectiveness to efficiency provides the manager with valid answers to the perennial question, "What do I need to know?"

Air Force Institute of Technology

Notes

1. Max D. Richards and Paul S. Greenlaw, *Management and Decision Making* (Homewood, Illinois: Richard D. Irwin, Inc., 1966), p. 21.

2. From an unpublished document from Office of Assistant Secretary of Defense for Installations and Logistics. Extracts of Statements of DOD Maintenance Programs presented to Dr. Robert N. Anthony, Assistant Secretary of Defense (Comptroller).

3. *Ibid.*

4. *Ibid.*

5. AFM 66-1, March 1968, par 5-41 and Attachment 2, par 1c.

6. From research of AFLC Log K261 reports by Major Robert Kunstel (AFIT). The ratio of scheduled to unscheduled maintenance will vary by weapon system and length of time in active inventory.

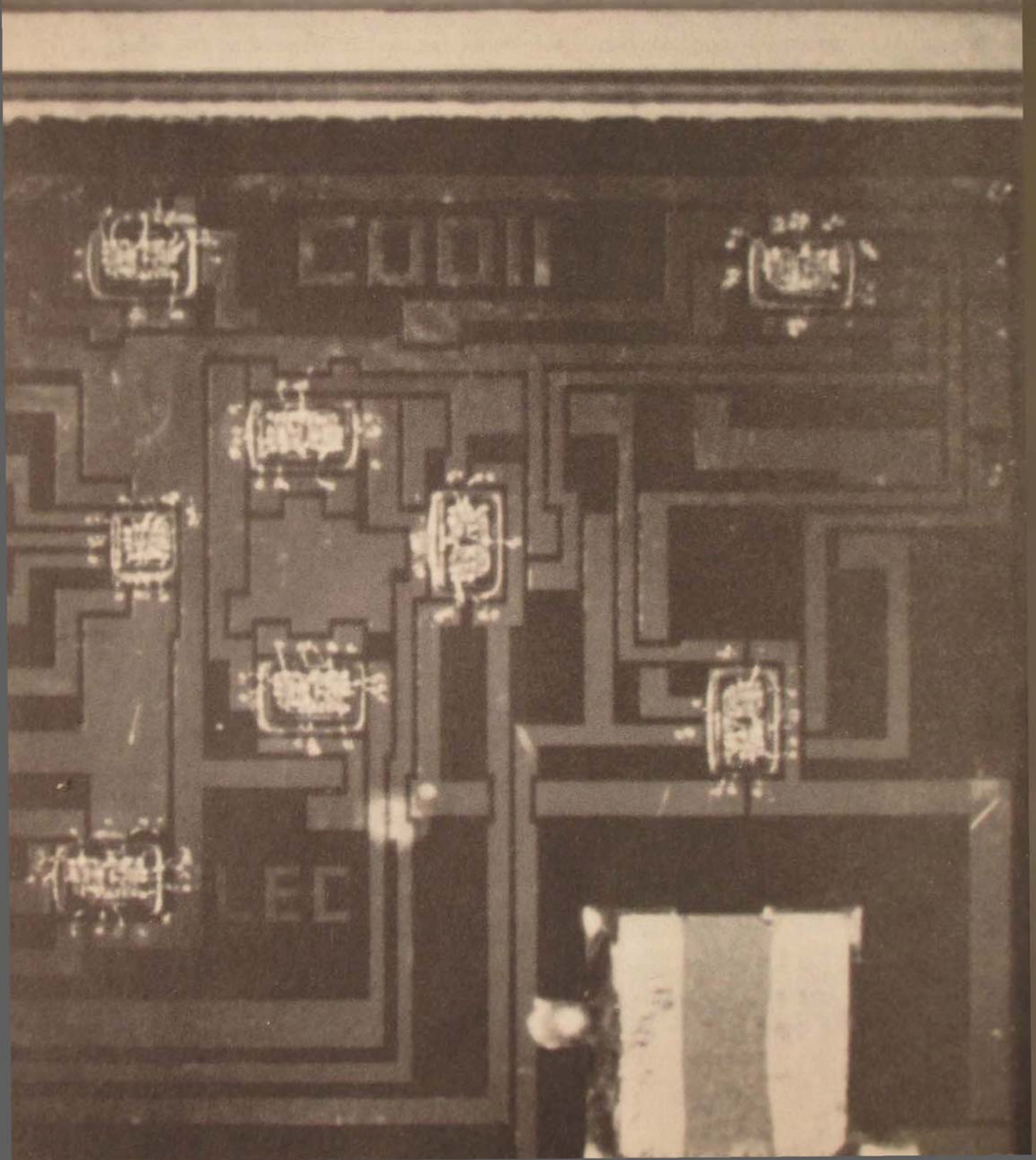
7. AFM 66-1, March 1968, par 3-65.

8. For a comprehensive systems review of "operationally ready," see presentation by Marshall Hendrickson, Operations Analyst, U.S. Naval Systems Command, in "Proceedings of the First Aviation 3M Data Products Symposium," U.S. Naval Systems Command, Washington, D.C., 1–2 May 1967.

9. Department of Defense Directive 4100.35, Development of Integrated Logistic Support for Systems and Equipment. (Includes all DOD references annotated in 4100.35.)

10. U.S. Department of Defense: Study Group for Aeronautical Depot Maintenance, Office of Assistant Secretary of Defense (I&L), 18 January 1964.

INTEGRATED COMMUNICATION, NAVIGATION, AND IDENTIFICATIO



WILLIAM J. SEN

SINCE before World War II there has been a continuous operational pressure for increasing the number and improving the performance of functions which electronic equipment provides for the operation of aircraft. The response to this pressure has been a series of individually tailored avionic systems, which have provided a variety of new capabilities as well as improved performance of older ones. In consequence, avionic components now account for a large and steadily increasing portion of the total cost of owning and operating military aircraft.

From 6 to 24 separate radio terminals are installed in current aircraft, and together with their ground counterparts they provide communications to and from the aircraft, identification of the aircraft, and information for use in navigating the aircraft. The numerous "black boxes" have separate power supplies, antennas, controls, and indicators. They use many portions of the radio frequency spectrum: VLF, LF, HF, UHF, SHF. (Table 1) In some instances use of these spectrum allocations has been highly inefficient. The channels are characterized by a variety of modulation techniques even in the same frequency band, with resulting incompatibilities.

The separate systems for communication, navigation, and identification (C, N, & I) all have the general function of transferring information. Their functional commonality has led logically to the concept of consolidating or integrating CNI by the use of common radio signaling techniques sharing common radio channels. But earlier investigations of the feasibility of this concept disclosed that operational considerations were too diverse to allow effective integration with then current technologies.

The growing recognition that the redundant avionic systems could be used in a mutually supporting way to improve the total capability has given impetus to a number of programs for integrating them in some systematic way that would reduce costs and improve performance.

An examination of planning documentation indicates that there are many new and improved C, N, & I systems projected for im-

C, N, & I Functions

Device	*Function*	*Frequency band*	*Signal description*
Long-range navigation (Omega)	N	10–14 KHz	Sequence of several continuous wave (CW) tones
VLF-LF survivable comm	C	14–60 KHz	25 Hz FSK; Morse
Long-range navigation (LORAN-C)	N	90–110 KHz	Pulse/CW
ADF	N	200–400 KHz	Variable (CW or voice)
LORAN-A	N	1700–2000 KHz	Pulse/CW
Long-range comm (HF)	C	2–30 MHz	6 KHz AM voice
VHF-FM comm	C	30–70 MHz	75 KHz FM voice
Marker beacons	N	75 MHz	400 Hz, 1300 Hz and 3 KHz tone modulated AM
ILS-localizer	N	108–110 MHz	90 Hz and 150 Hz tone modulated
VOR	N	110–118 MHz	Two signals, 10 KHz apart; one FM, one AM/FM
Civil comm—AM	C	118–136 MHz	50 KHz AM voice
Military comm	C	225–400 MHz	100 KHz AM voice
ILS glide slope	N	330–335 MHz	Same as ILS-localizer
TACAN, DME	N	960–1215 MHz	3 Microsecond pulses
IFF	I	1030–1090 MHz	0.5 Microsecond pulses

Table 1

plementation during the next five years. It is reasonable to presume that this proliferation will continue unless steps are taken to achieve integration. (Table 2) One such step was the concept study which I was designated to report upon and which formed the basis for this article. The study included a review of existing C, N, & I systems, a derivation of operational needs for communication, navigation, and identification functions; a synthesis of a feasible CNI system, and its capabilities; and comparison of it with separate systems as they might exist in the future.

Almost all of the many different missions performed by military aircraft have a common portion, which may be called the terminal and enroute phases, consisting of taxi, takeoff, departure, enroute segments, and the corresponding return and recovery segments. (Figure 1) For a transport aircraft, these segments constitute the entire mission; for other aircraft, such as strike, reconnaissance, or close air support aircraft, requirements beyond those for the terminal and enroute phases differ according to the mission. An integrated CNI system should satisfy the needs for the terminal and enroute phases of the flight profile because these are common to all missions. The needs peculiar to the mission objective area for some missions may not be accommodated in other aircraft; for example, radar bombing sets, fire-control systems, etc. The needs common to all military aircraft are in the areas of communication, navigation, and identification.

Communication needs. Each individual aircraft communicates with a number of control stations during the course of its mission and may also communicate with other aircraft. Aircraft, then, may be regarded as highly mobile subscribers needing communication at any time, regardless of their location, with ground command and control stations and other aircraft. The location of these other subscribers generates a need for long-distance and short-distance coverage on a worldwide basis. Under certain circumstances it is desirable that the communications be secure, antijam, and authentic.

Navigation needs. Navigation accuracies are of two types, absolute and relative. Absolute implies a knowledge of position with respect to a worldwide grid; relative implies a knowledge with respect to a particular point in a more or less localized area. The requirement to provide absolute and relative navigation accuracies applies to a worldwide coverage for long-range and short-range navigation in the same sense that there is need for similar coverages for communication purposes. There is a need for a common grid navigation function to facilitate air-ground combatant operations in the objective area. Under certain circumstances, it is desirable that navigation data also be secure, antijam, and authentic.

Identification needs. Identification, friend or foe (IFF), is required ground-to-air and air-to-air. It is presently accomplished for both air-to-air and ground-to-air by cooperative means.

the integrated system

System integration per se has no intrinsic value. An integrated CNI system to be of value should meet in some real measure the following objectives: It should provide an enhanced capability to communicate, navigate, and provide identification; it should effect substantial economies in weight, volume, power consumption, and cost of the avionics aboard the aircraft and should provide similar economies in the supporting ground configurations; it should result in economies in maintenance, supply, training, and other logistic considerations; it should conserve the radio frequency spectrum, and its radio links should have reduced vulnerability to enemy actions. Any proposed integrated system should have all this potential.

Although the thrust of this investigation has been toward elimination of unnecessary redundancy, the fact that redundancy may be necessary for reliability and survivability has not been overlooked.

The CNI environment. The overall concept presented here has been derived from consideration of the information needs of the aircraft in performance of its mission. Much of this information is derived from a cooperative environment by means of radio links. Systems such as TACAN (tactical air navigation), LORAN (long-range navigation), and UHF (ultra high frequency) radio provide signals from which the aircraft can extract information for the conduct of its mission. In addition, information must be returned to this cooperative environment of command centers, friendly radars, traffic control, etc., for coordination of one aircraft mission with another. When examined from the viewpoint of information transfer, the separate functions of communication, navigation, and identification appear to have sufficient features in common to postulate that they can all be performed through a single radio terminal in the aircraft. This hypothesis, a single terminal on board the aircraft with a coordinated environment external to the air-

C, N, & I Configuration
for a
Proposed Tactical Aircraft (1973/75)

	Quantity	Weight (lb)	Volume (cu ft)
Communications			
HF-SSB	1	61.0	1.93
UHF-AM	1	13.0	.31
UHF-FM	1	8.0	.11
UHF-comm	1	6.0	.10
Crypto	1	3.5	.11
Data link	1	8.3	.25
Intercom	1	2.4	.05
Identification			
IFF-A/A	1	37.0	.43
Computer	1	35.0	.47
IFF-A/G	1	12.0	.21
Computer	1	18.0	.35
Beacon transponder	1	5.9	.11
Beacon inter	1	15.0	.37
Navigation (short-range)			
TACAN	1	21.0	.27
Instrument landing	1	5.0	.20
UHF-ADF	1	13.0	.43
Radar alt	1	15.5	.29
TOTAL	17	279.9	5.99

Table 2

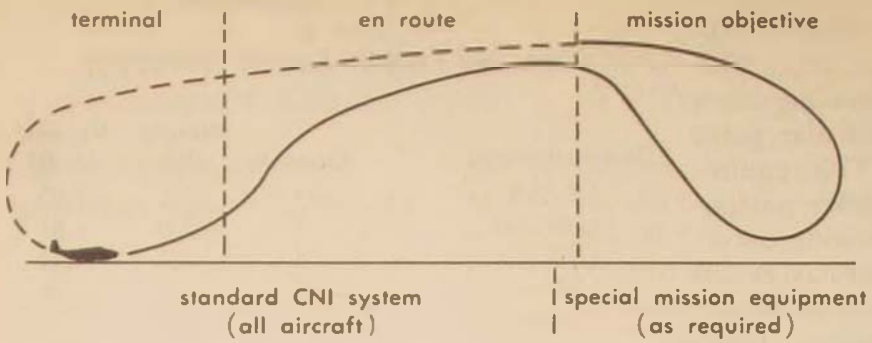


Figure 1

craft to interact with this terminal, is the key concept in the study. The cooperating terminals, ground, air, or space, will be identical or will at least use many identical modules from the viewpoint of an information system performing many functions for the aircraft and its environment. The integrated system must be considered as a whole.

Consideration of the whole involves three major areas: the aircraft terminal, the space portion, and the ground or surface-based portions of the electronic environment. These three segments of the CNI environment operate together to provide the direct and relay CNI services.

The aircraft terminal consists of a wideband transceiver, antenna, user set, signal processor, and computer. The terminal has a large degree of flexibility in that different functions can be performed with the same hardware by appropriately programming the computer and processor. The space portion of the environment consists of groups of satellite repeaters, which are employed for relaying signals to or from aircraft and other terminals. The ground portion of the environment consists of terminals that are programmed to provide for direct transmission of signals to and from aircraft, or for access to the satellites for relaying signals over long distances. It also includes the equipment necessary for the real-time monitoring and control of the system.

Figure 2 is a block diagram of the CNI terminal in the aircraft. The terminal is a wideband radio link operating at a frequency in the UHF or higher bands. The signal is digital. The generation, formatting, and detection of signals are controlled by a signal data processor. Both the transmitted and received information in the signal is routed, addressed, or manipulated by the data processor, which is a basic part of the terminal.

The digital signal format and the signal processor afford resolution of signal timing to within fractions of a microsecond, permitting accurate ranging on CNI sources external to the CNI-equipped aircraft. Synchronization with an absolute time standard, which is part of the ground environment, provides one of the elements of data from which position can be

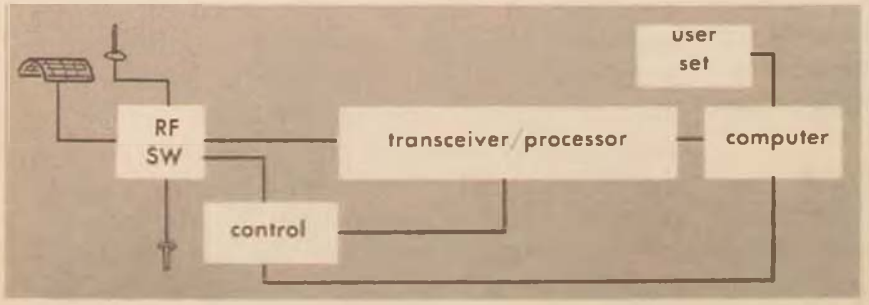
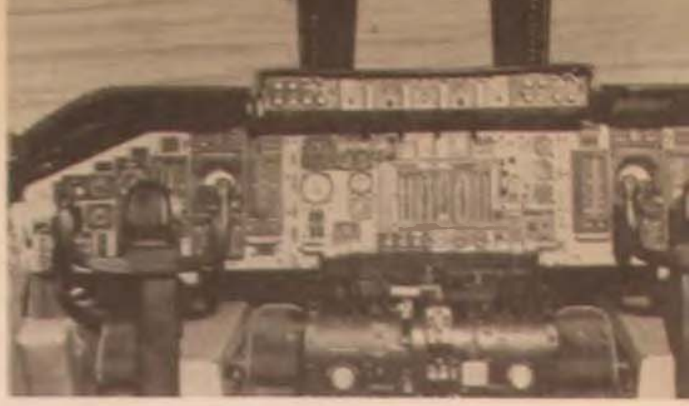


Figure 2

The cabin interior of the C-5A Galaxy



Instrument panel, the C-141 Starlifter

Interior of the C-5A cabin as seen through a fisheye lens

computed and in addition will provide signals having the characteristics necessary for the IFF or collision-avoidance functions. The wide-band digital signals also provide the basis for jam resistance, for multiplexing several functions onto one transmitter, and for permitting signals transmitted from many sources to occupy simultaneously the same portion of the radio spectrum (multiple access).

The multiplexing/multiple-access capability permits an aircraft to transmit or receive 2400 bits per second digital voice simultaneously with the reception and processing of navigation signals and the transmission of required identification signals. The processor could also permit automatic readout of status information such as position, heading, speed, should the control system require these data.

The spacecraft functions as a communications relay. Direct coverage from a terminal in an aircraft to a ground terminal or another aircraft terminal is line-of-sight, but the repeaters in the satellite extend this coverage to any other ground terminal or aircraft in sight of a satellite visible to a CNI-equipped aircraft. The spacecraft also performs a second function of relaying navigation signals from a ground station to aircraft or other user, where they are processed to obtain precise position.

The satellite deployment configuration employed in this analysis consisted of four satellites and three ground-control stations. The satellites form a constellation at synchronous altitude, one satellite being stationary and the other three in inclined elliptical orbits that cause them to follow a racetrack pattern about the fixed satellite when viewed from the ground. Four such satellites placed 90 degrees apart at the equator provide global coverage, with the exception of a small part of the South Polar Region.

The ground or surface portion of the electronic environment will provide the same services as are provided by the existing C, N, or I equipments. The way in which the service is provided will differ markedly from the way current equipment operates. There are various ways in which a CNI terminal or combination of terminals can perform such functions as instrument landing, local area navigation, and air traffic control. The determination of the best or most efficient way was beyond the scope of the analysis that has been performed. The analysis has been limited to considering how each of the C, N, & I ground systems might be replaced by a CNI-compatible ground environment terminal that provides the same services. The selection of the configuration of the integrated ground system(s) awaits further detailed engineering. Some possible configurations merit brief description.

A single CNI terminal on the ground can provide a high-resolution ranging signal in the direct mode, as well as an authenticated, jam-resistant communication channel in the direct or relay mode. Such a terminal could functionally replace G/A UHF stations and HF stations, the distance-measurement transponder portion of TACAN, and the IFF beacon interrogator used at radar sites.

Two or more separate CNI terminals at known ground locations, working in conjunction with a CNI-equipped aircraft, could provide a capability for position fixing, as well as redundant communication accesses. Combinations of terminals appropriately sited may provide the information and functions now performed by TACAN or LORAN or provide a signal environment for precision guidance or instrument landing. Terminals configured this way could have application to precision bombing guidance for close air support.

A single terminal with a directional antenna and suitably programmed signals, in conjunction with the aircraft CNI terminal, could provide increased accuracy in the GCA function, with lower power requirements, while still maintaining the voice capability.

Operations and the users. An aircraft equipped with a CNI capability would operate in much the same manner as it would if the communication, navigation, and identification functions were separately automated. This will be radically different from current techniques that require the pilot to use voice transmission, manual position charting, and manual activation of identity codes for IFF. Much of the routine reporting and position determination now performed manually could be performed automatically. Furthermore, the additional ca-

pabilities offered by a CNI system are expected to point the way to fruitful changes in operational procedures and doctrine.

technology

Four advances in technology, in combination, make a major impact on the possibility of achieving a practical and fully integrated CNI system. These advances are satellites, sophisticated modulation multiplexing signal structures, digital techniques for signal processing and computation, and microminiature component technology.

Satellites as communication relay stations. One of the principal barriers to earlier attempts to achieve integrated CNI systems has been the dissimilarity of radio techniques for long-range and short-range purposes. A single technique suitable for both long and short ranges is a fundamental requirement for a fully integrated system. Recently proven satellite technology makes this possible. Radio techniques formerly suitable only for short distance (line-of-sight) are now also suitable for long distances because relaying by satellites can now provide worldwide coverage at relatively low costs. In the past, line-of-sight relay stations on the ground or in aircraft have been technically feasible, but the cost of obtaining needed worldwide coverage has been prohibitive. In other words, long-distance coverage of sufficient quality and satisfactory reliability can now be provided by the same signaling techniques suitable for short distances and at costs competitive with other long-distance techniques for both communications and navigation.

Malfunction Detection Subsystem in the C-5A

Sophisticated signal structures. Two new basic types of wideband signal formats, namely, spread spectrum and frequency hopping, and many hybrid combinations of these, have been studied extensively in the last decade. Various applications have been considered, and some have been brought to prototype design and others to operational inventory.

There is developing in this country a good understanding of these signal structures and their capabilities. The importance of this type of signal structure to an integrated CNI system cannot be overemphasized. The use of one of these sophisticated signal structures will provide all of the following desirable characteristics: the capability to multiplex or share the radio channel for CNI signals, the capability for all air and ground terminals to have access to each other as needed, the capability to utilize efficiently the satellite relay station as a multiple-access channel, the capability to have antijam protection, the capability to provide authentic signals, the capability to provide accurate navigation at long distances, and the capability of encoding for security purposes. Many of these features can be provided individually or in some combination by less sophisticated signaling structures, but the fact

that they can all be provided by one structure is an essential element of the technical feasibility of a fully integrated CNI system.

Digital techniques for signal processing and computation. The advances in digital computation are well known. It should suffice to say that airborne digital computers are available which can be time-shared to perform a large number of computational, control, and processing functions.

There have been similar advances in the processing of discrete (digital) signals. The state of the art encompasses an understanding of the solid state devices, components, and circuits for equipment needed for signal processing (the generation, modulation, transmission, reception, demodulation, and detection) for the new sophisticated digital signal structures.

Microminiature component technology. The advances already made in miniaturization of solid state devices and components allow for fabrication of low-cost equipment capable of providing a limited form of integrated CNI equipment sufficiently reliable and inexpensive to compete favorably with separate, redundant equipment. It is anticipated that in the near future, through the further development of "large-scale integration," new device and component technology will become available to support the sophisticated signal structures that might be used for the fully integrated CNI system.

transition

This analysis was not constrained to trying to make the system evolve from present equipments. The emphasis has been on achieving a fully integrated system. An approach to achieving the fully integrated system, one which takes account of today's investment in separate systems and the evolution from these systems to the integrated system, is the objective of a study which is currently in progress.

However, there has been a sufficient examination of the alternatives of separate, partially integrated, and fully integrated systems and their costs to indicate that improved performance and increased savings are proportionate to the amount of integration obtained. If integrated and separated CNI systems could be compared in the abstract, marked reductions in cost as well as advantages would accrue to the integrated system. When one adds the practical considerations of amortizing the heavy current investment in separate systems and of continuing the costs of operating and maintaining the separate systems during an eight- to ten-year period of evolution, then little if any savings result until the transition is complete. After that, the savings in capital costs and in operating and maintenance expenses will be substantial, the amounts being proportional to the degree of integration that is obtained. This appears to be true regardless of the time at which an integrated program is initiated. This suggests that early efforts be undertaken to control and constrain the development of new separate systems so that they will be compatible with evolution to an integrated system, and/or to reduce the planned development of these new separate systems in some orderly way to achieve early cost benefits.

THIS report summarizes an investigation of the merits of an integrated communications, navigation, and identification system for military aircraft. The investigation sought to determine whether current technology can provide an integrated CNI system that will meet the worldwide military needs in the 1970 time period more effectively than the present separate communications, navigation, and identification systems, and at reduced cost. The analysis disclosed that the concept of an integrated CNI system utilizing new technology is promising and that the promise is such as to warrant further development.

Hq Electronic Systems Division, AFSC

Acknowledgment

The author, having been designated to report the results of the group study, wishes to acknowledge the contributions made by the technical staff members of ASD (SEG), SAMSO, RADC, AFAL, and the MITRE and Aerospace Corporations during their participation in the study.

In My Opinion

GRADUALISM– A FLEXIBLE RESPONSE

COLONEL FREDERICK J. ADELMAN

"But 'glory' doesn't mean 'a nice knock-down argument,'" Alice objected.

"When I use a word," Humpty Dumpty said, in rather a scornful tone, "it means just what I choose it to mean—neither more nor less."

LEWIS CARROLL, *Through the Looking-Glass*

GRADUALISM, for good or ill, has been established as a military concept in the minds of some. But not everyone. There are those who deny that the concept even exists. Listen to General Earle G. Wheeler, current Chairman of the Joint Chiefs of Staff:

> . . . gradualism is not a valid military concept but rather a catchword that has been coined in certain circles. If used at all, the word means merely the speed of application and the power with which force is applied in a given response. . . .[1]

There are those who defend the policy on the basis of political necessity. And then there are the critics. Critics of the U.S. policy of graduated application of force in Vietnam have used the word "gradualism" with great vigor and frequency.[2,3] In describing the policy as gradualism they have given the word a negative connotation, since "-ism" words, such as Com-

munism, Nazism, fascism, and pacifism, generally are used as opprobriums.[4]

In view of this diversity, it is worthwhile to ask: Does the concept exist? Is it a valid one? What are its implications?

Based on the two premises that there are identifiable elements in our graduated application of power and that the policy has existed for an appreciable period, this article will treat gradualism as a concept and discuss it in terms of both its genesis and its recent applications.

As a starter, I define gradualism as a term referring to the application of military power on an incremental, controlled-response basis. After each carefully restrained application of force, there is a pause. From this pause, the enemy receives a signal and reconsiders his position before going on with the conflict.

Let us, then, examine the elements of gradualism: *graduated applications on a responsive basis, pauses,* and *signals.*

Gradualism as a response was exemplified in President Lyndon B. Johnson's statements at news conferences in regard to Vietnam: ". . . we have used our power not willingly and recklessly but reluctantly and with restraint . . . the application of military force when it becomes necessary must be for limited purposes and tightly controlled. . . ."[5] And, in referring to the effectiveness of bombing North Vietnam: ". . . we have our policy of responding appropriately, fittingly. . . ."[6]

The political nature of the concept was clearly expressed in a statement by General Wheeler, speaking of Vietnam in an interview in June 1968: "Within a limited war, it is well within the rules for the political authority to establish the geographical limits and such other guidelines that are in keeping with those objectives."[7]

One of the first statements in regard to *pause* appears in 1957. General Lauris Norstad, in a speech, "NATO: Deterrent and Shield," reiterated the two functions of the NATO ground forces: providing a tripwire to signal massive Soviet aggression and halting the Soviet advance temporarily while the Strategic Air Command was doing its job.[8] In 1963, in testimony before the Senate Armed Services Committee, Secretary of Defense Robert S. McNamara referred to this same NATO pause, but with an important change: he said the function of the pause is to give Soviet leadership *time to reconsider* the course of the military action they are undertaking.[9] This statement of pause as a political/*military* strategy was evidence of a revision in Pentagon thinking and was the apparent forerunner of the pause element of the gradualism concept. The pause was first implemented in Vietnam in May 1965[10] with announcement of our first bombing halt.

As early as July 1964, the Department of Defense had adopted the concepts of "telegraphing" warnings to Hanoi and "signaling" our intentions. The military manifestations of these concepts were the restrictions on bombing targets and the "retaliatory-strikes-only" strategy of that period.[11] Published exposition of the signals concept appeared in 1965 when Dr. Thomas C. Schelling, Professor of Economics, Harvard University, discussed signals and feedback in international relationships in an article in the *Bulletin of the Atomic Scientists.*[12]

At about the same time, the literature on U.S. military strategy contained notations of a limited application of force with "strategic persuasion and coercion" as main features. A RAND Corporation paper, "Some Thoughts on Graduated Escalation," is an excellent example of this general line of thought.[13]

Coercion is implicit in the gradualism concept, as indeed it is implicit in all military actions; but its application is different in an important way. In a gradualist approach, the coercion supposedly arises from enemy recognition of the pause as a signal, not from his evaluation of his military actions as defeats.

Terms like "gradualism," even when carefully defined (which gradualism is not) change with time and usage. For example, the term "flexible response" was very clearly delineated at the outset but has apparently changed its connotation since its inception in 1955. In this connection it is worthwhile to review briefly the evolution of "flexible response" because of (1) its closeness to gradualism as a concept and (2) the importance of its author's positions in the armed forces and

as a high-level government adviser at the time the gradualist approach was developed.

General Maxwell D. Taylor is credited with the concept of a flexible response. In his 1955 paper entitled "A National Military Program," General Taylor outlined a strategy in which U.S. military forces would be developed so that the most appropriate elements could be applied to a particular strategic or tactical situation. At that time it meant simply that we would have available sufficient force, conventional or nuclear, to deter or win quickly a war at any level from insurgency to general war.[14]

In speeches in 1957, General Taylor said the purpose of the armed forces is "deterring or winning quickly any local aggression. . . ."[15] and, " . . . if we allow a limited aggression to go unchallenged—if we attempt to suppress it with insufficient means or insufficient speed we run the risk of allowing a small war to grow into that great atomic war which it is our purpose to avoid. . . ."[16] In 1959, in testimony before the Senate Armed Services Preparedness Committee, General Taylor stated that "we must be willing to make up our minds that we will use all the force necessary to secure the lives and safety . . . we must be willing to go all the way down the road." The latter statement was in answer to questions by then Senator Lyndon Johnson on what we should do in the event of denial of free access to Berlin.[17] And so, until the mid-sixties, the flexible response concept remained constant—a spectrum of available military force capable of meeting a threat at any level. But by 1964 the connotations of flexible response as our national military policy and as it was applied in Vietnam had been broadened to include the elements attributed to gradualism—graduated applications, pauses, and signals.

General Taylor's speeches, writings, and testimony subsequent to 1964 show a sharp variance from and additions to his original flexible response concept.[18] " . . . I have no doubt that the warning message is getting through to the leadership of Hanoi. . . . The third reason for the decision to use our airpower was to provide a sobering reminder to Hanoi that progressively they must pay a mounting price for the continuation of their support of the Viet Cong insurgency. . . . " An example is his testimony before the Armed Services Investigating Subcommittee in 1966, when he expressed the belief that the strategy then in force in Vietnam—measured application, pause, and signaling—was the correct one.[19]

The 1967 Taylor book, *Responsibility and Response*, reflects the revised thinking. Measured application of force that will *coerce* or *convince* the enemy that negotiations are desirable is a main theme, along with emphasis on the rightness of limited response policy.[20]

In fairness, it must be pointed out that in 1968, at a Thomas D. White Lecture at Air University, General Taylor took special pains during the question period to distinguish between gradualism and flexible response and to disclaim any authorship of the former. The exchange went like this:

> QUESTION: In this month's *Science and Mechanics* magazine, a very high-ranking military man accuses you of developing our present strategy of minor escalation, gradualism and flexible response, . . . do you believe that gradualism or flexible response is a valid strategy?
>
> ANSWER: I haven't seen this article and I will probably read it with little enjoyment. First, I will plead guilty, in part at least, to being an exponent of the so-called doctrine of flexible response. I don't think I can claim any direct responsibility for gradualism, although I must say I understand the reasons behind it and I can't prove it's wrong any more than I can prove its critics are necessarily right. But I would say that flexible response and gradualism aren't synonymous in any sense of the word. Flexible response as I have used it and as I think that most people use it simply means a readiness to act across the whole spectrum of military challenge and to respond appropriately to what is required. Hence, this response can range from acts of propaganda to general nuclear war across that whole span of conflict. Hence, I would dismiss flexible response as not being really the issue in Vietnam. The question of whether gradualism is right or wrong or not, that is something the historians will have to sort out when this is all over. . . .[21]

Whether General Taylor is the author of gradualism or merely an exponent of a concept that has been changed by the manner in which it was implemented is not the important issue. Nor is it of vital importance to determine whether gradualism is of political or military origin. The significance of this discussion lies in whether the concept itself is a correct one. My contention is that it is basically unsound.

The theory may be sound when applied to economic methods, such as bargaining. Or it may be sound in the purely political realm where pressures and coercion are the sum and substance of the theory. But as depicted here, and applied in Vietnam, the concept is an amalgam of military and political strategy, and of military as well as political objectives. Its psychology is based on the American culture rather than that of our adversaries.

The military tradition that wars are fought to be won by a victory has not yet been countermanded by efforts in either very limited situations, such as insurrections in emerging nations, or in the larger limited wars, such as Korea. It is still a military victory, not military pressure, that gives rise to an armistice favorable to the victorious side.

The theory is unsound for psychological reasons also. It assumes that both parties in the struggle understand each other's words in exactly the same manner. It assumes that the enemy will believe you when you say that this is a limited application of force, to be followed by a higher application. It assumes that the enemy will operate in accordance with the scenario you lay out for him with your pauses. And it assumes that he will understand your signal. None of these assumptions is realistic. It does not take into account that the enemy has an entire strategy of his own, completely separate from yours and having no relationship to your objectives. It fails to account for the fact that the enemy can adjust to unfavorable conditions and keep adjusting so that what appears to you to be escalation of effort appears to him as a victory won. This is particularly true in the Vietnam situation, where a small country is literally successfully defying an obviously much larger and stronger nation.

To put it another way, if I apply limited military pressure and then pause as a signal, I have already stated my reluctance to apply more than the smallest amount of pressure. Hence, my actions are predictable to the enemy. At this point, the enemy can feel secure in the knowledge that whatever he does will meet with no more than the smallest increment of increased pressure. This makes my strategy essentially weak and his essentially strong. He *always* knows what I am going to do; I am always at a disadvantage because he is free to do whatever he pleases. Surprise, mass, flexibility—all the classic elements of military advantage—are his to use but are denied me.

One of the least desirable features of gradualism as a concept of war is that it confuses the issues of theory and implementation. In Vietnam a military strategy, flexible response, has been wed to a political/psychological theory, gradualism, with the result that neither the military nor political objectives have been achieved on terms favorable to us. To be explicit: A stated objective of the Vietnam war is that we wish the North Vietnamese to pull back their forces from South Vietnam and enable the South Vietnamese to run their own country. There is no quarrel with this limited objective, and as President Johnson has stated, "We seek no wider war." But to arbitrarily draw a line at the 20th parallel for bombing does not necessarily support this objective. If we feel that bombing is necessary to gain our objective (pull-out by the North Vietnamese), we should be able to apply this particular portion of our national power to any degree we see fit. Then we will not have changed our objective; we will have more fully employed our capability for accomplishing it.

In terms of correctness of strategy, there is a barrier that separates political from military action, and different conditions obtain once the barrier is passed. Perfectly appropriate and practical rationales on the political side become improper and ineffective in the military realm. The barrier is best visualized as the point at which the decision is made to go to war—to shoot to kill—to destroy by military actions the adversary's base that supports his effort, be it his people or his supplies. Once

we have passed "through the looking glass," the former psychologies and realities no longer apply. These "normal" conditions do not again exist until the war has ceased. It is as euphemistic and unrealistic to speak of limited wars as though they were somewhere short of the brutal facts of war as it is to describe a woman as being a little bit pregnant. There just "ain't no such thing."

None of the foregoing implies that it is impossible to limit wars. Nor does it imply that wars are fought, ultimately, for other than a political or material gain. What *is* implied is the essentiality of recognizing the different circumstances that exist—before and after hostilities—and the different strategies that must be employed when military force—war—is used to gain ends that cannot be obtained by other means.

From all this, what can we draw as conclusions in regard to gradualism?

• Unlike most military strategies, the conceptual elements of gradualism are based on political and psychological factors, rather than on military experience or tradition. That graduated, very limited response is the natural reaction of the politician to politico-military conflicts is posited by Harvard Professor Henry A. Kissinger and others. In his article "Domestic Structure and Foreign Policy" he states: ". . . to the statesman gradualism is the essence of stability; he represents an era of average performance, of gradual change and slow construction. . . ."[22] The special importance of the political factor in the Vietnam situation is detailed in periodicals as well as the public press.[23]

• Gradualism, as a concept, is an identifiable entity. Its elements are graduated application of force on a responsive basis, pauses, and signaling.

• Although generically related and chronologically contemporary, gradualism differs from the original flexible response concept in several important aspects.

• The concept, policy if you will, has not been successful in its only application to date, Vietnam.

• Gradualism is founded on an unsound psychology and an inadequate appreciation of the nature of our adversaries; it is indefensible from a purely military viewpoint.

• The primacy of political objectives and the legitimacy of the desire to keep wars at the lowest possible level are essential considerations. However, it is equally as important, or more so, to recognize that once we are committed to application of armed force we have passed a barrier beyond which political reasoning and political psychology cannot be effectively applied to military operations and objectives.

The rationale behind gradualism and use of the concept as a guide to future actions should be expunged from our political and military doctrines. To allow it to remain is to jeopardize the future security of the United States and those nations it supports.

Aerospace Studies Institute

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MILITARY CIVIC ACTION

LIEUTENANT COLONEL MALCOLM S. BOUNDS

MOST military personnel have heard of the term "civic action" by this time. A few articles and stories have appeared, but they usually present only a localized picture. The average person not associated with Military Civic Action (MCA) still has a very hazy image of what it is all about.

After queries to several people of various ranks in Vietnam in 1967 as to what they thought civic action meant, it seemed to me that MCA had not been sold at all. Most had the impression of leaping into a jeep, tearing off down the road, wheeling into the local orphanage, and passing out gum, old clothing, soap, etc. In Vietnam particularly, this procedure is more damaging than good as it undermines basic principles of the Vietnamese by ignoring the elders and catering to the children. Sometimes the children, as a result, learn to beg, which is even further degrading. Properly done through the village governing structure, civic action can be productive. By this time, however, the American public must think that we support at least one orphanage for every man we have in Vietnam, judging by the barrage of photos under the title of "Civic Action."

What is civic action then? Simply stated, it is nation-building. Take a look at the globe: the underdeveloped nations outnumber the rest. So as long as the United States assumes a leading position in world affairs, MCA will be with us. The emerging nations possibly can eventually raise their standards; however, technology is expanding at such a rate that the "have" nations tend to further outstrip the "have not" nations. Strong efforts in nation-building assistance by the richer nations can

materially reduce this economic gap.

Professor Walt W. Rostow has described the national development of the United States through five stages: (1) the traditional society with scattered agricultural communities; (2) the preconditions for economic takeoff in which the nation develops social overhead capital in the form of transportation, communication, and investment; (3) the economic takeoff—small industries spring up, internal trade increases, a middle class starts to form, etc.; (4) the drive to maturity—heavy industry develops, internal and external trade advances, development of stages 2 and 3 increases; and (5) the age of maturity and high mass consumption.

From the previous stages of national development, four prime requisites stand out in order for national development to proceed through the fifth stage: transportation; communications; investment—in the form of internal and external trade, real estate development, banking; and viability and political stability. Because of deficiencies in the last item, some older nations will not progress far into stage 5.

Why do we say "Military Civic Action" instead of merely "Civic Action"? In almost all underdeveloped countries, particularly those in stages 1 and 2, the elite of the country are the military. In the military are found those capabilities necessary to nurture national development: leadership, technical skills, administrative experience, mobility, and willingness to spend years away from home. If our national policy dictates assistance in development of a nation, we must work with the existing power structure to accomplish any positive results. And that power structure is usually military. When the U.S. has attempted otherwise, the result has usually been a dismal failure.

Much the same was true in the development of our own nation. Although its work was not called Military Civic Action at the time, our Corps of Engineers has been instrumental in building our nation over the past 160 years, particularly in developing the West. The military was practically the only source of engineers in the earlier stages. The military forts of the old West were graphic reminders to the settlers of U.S. government presence and backing.

The Air Force, thanks to its capability of speed, should be even more effective in Military Civic Action. Its history bears this out: the Army Air Corps encouraged civil aviation by development of airways, communications, landing fields, and the aviation industry. Aerial photography for flood control work materially shortened response time for the engineers. Spraying by aircraft for agriculture was developed by the Army Air Corps. In developing nations today, aviation offers the quickest means for opening internal communications and transportation. Short takeoff and landing airstrips are relatively easy to construct with local labor in remote areas. Surface transportation and communications can then be developed as resources permit.

Probably the most convincing argument for expending effort on Military Civic Action was furnished by the MCA Section of Seventh Air Force: "It cost $26,000 to kill each of 7,200,000 men in World War I. It is presently costing over $55,000 to kill each Viet Cong. We have expended about $125 for each VC defector through psychological operations/civic action." By attempting to kill all the VC, we probably would first run out of money. The expenditure of more funds on psyops/MCA would not produce a rise of linear-scale proportions in the number of defectors, but it would certainly be more economical than killing on a greater scale than the present.

Several difficulties arise in training the U.S. military to perform MCA. First, it is difficult for Americans to recognize the attitudinal differences of people who have a different culture, particularly the oriental. According to Dr. Abraham Hirst, of U.S. Agency for International Development, most orientals are basically harmony-oriented, with little concern for time in the accomplishment of objectives. This is the opposite of Americans, who are action-oriented: Get it done now! The differences in mores, traditions, beliefs, and languages inhibit Americans from being more effective. The training of their allied counterparts also suffers from these differences. The American often becomes impatient with the

indigenous personnel and does the task himself rather than wait. Also, the American-designed programs tend to become too complex. They have to be kept simple and within the existing local technical capability, else they will be discontinued as soon as the Americans leave.

Our present MCA capability in Vietnam consists of a staff section in Headquarters Seventh Air Force and one officer, one airman, and one Vietnamese national at each major base. Civic action councils meet at Seventh Air Force headquarters and at each base to decide courses of action and priorities. All civic action projects undertaken must be wanted by the people, must include participation by the people, must be capable of continuation without protracted U.S. assistance, and must support the Vietnam government's Revolutionary Development Program. Projects are executed through and in concert with local officials at all levels, to insure identification of the government with the people. The USAF role emphasizes Vietnamese self-help and provides technical assistance and resources not available from other sources. The base civic action officer uses volunteer USAF personnel to further the local civic action programs. After these volunteers work a normal ten- to twelve-hour duty day, little time is left for civic action. The abundance of needs with civic action potential in areas contiguous to all Seventh Air Force bases, coupled with the positive results achieved from efforts to date, has led Seventh Air Force to support the requirement for a full-time eight-man civic action team.

The Military Provincial Health Assistance Program (MILPHAP) presently has eight Air Force teams working full time at Vietnamese hospitals to upgrade facilities and increase training. Since personnel working full time can always produce a more effective program than a part-time effort, the PACAF Civic Action Conference on 12–15 March 1968 strongly supported the formation of a nine-man Medical Capabilities Team at each of the major bases in Vietnam, to work full time in civic action. These teams will assume the MEDCAP activities presently being conducted by volunteer medical service personnel during their off-duty time. The composition of the teams will enhance professional capability in an already successful program. The full-time aspects are anticipated to increase the present monthly average services rendered as follows: medical patients treated—from 10,296 to 78,160; dental treatment procedures—from 1893 to 14,880; immunizations—from 4279 to 31,010. The teams can also present 2080 instructional hours each month. The included veterinary officers will enhance rabies-control programs and extend the teams' scope to encompass agricultural improvement projects.

Air Force civic action has progressed from nothing two years ago to a very influential factor in Vietnam today. Not only is progress being made in national development around the air bases but many side benefits accrue that are not publicized. At least three planned attacks on air bases were reported through passive intelligence collection prior to the VC/NVA Tet offensive. At least three were reported during the offensive, and other last-minute warnings were received in time for U.S. personnel to take shelter, thereby saving many lives. These warnings were received through MEDCAP/Civic Action activities and were not actively solicited. To make intelligence collection a part of MCA would be self-defeating. Of the six attacks prevented, how much was saved? Who knows: Two F-4s? Three C-130s? Five A-1s?

No one knows; but judging from past experiences of attacks, we would have lost at least ten million and possibly as high as twenty-five million dollars' worth in equipment—to say nothing of American and Allied lives. Until about January 1968, all this cost us was a few dollars to support the 26 full-time personnel and other personnel as volunteers for extra duty. The MCA budget for the

The CH-3E helicopter, famed as the "Jolly Green Gi in Vietnam, makes friends in Central America by fl with U.S. Air Force Southern Command. Since April 19 CH-3Es have evacuated the sick and airlifted food, me cal supplies, and building equipment to remote ar

last half of FY 68 was only $339,000. Any way you look at it, the price is cheap. The FY 69 MCA budget for Vietnam and Thailand is less than the cost of one F-4. How many F-4s, C-130s, A-1s, etc., can we save through civic actions? But the money value of those saved aircraft is only an incidental benefit to the United States; the real value is that MCA, the National Development Program, and the Revolutionary Development Program could enable us to withdraw altogether.

Another of our prime objectives is to get the Vietnamese Air Force actively involved in MCA. Seventh Air Force works through the

Air Force Advisory Group (part of the MAAG) to interest the VNAF. This has been somewhat less than productive at some bases, while at others it has moved along very well. There are adverse conditions in the VNAF that inhibit a full-scale MCA program: the VNAF numbers only 16,500 men and supports five combat wings; the lower-ranking VNAF airman is not as well off as the average villager around the air bases; and most Vietnamese are more family than nationally oriented, so it is difficult to motivate all of them.

In Thailand the Civic Action Section of the 606th Air Commando Squadron is doing the major portion of civic action. Composed of 84 U.S. personnel and 12 Thai interpreters, the section's objective is to assist and train the Thais in civic action in the northeast provinces where the potential for insurgency is greatest. Personnel available cover a wide range of skills, including structural engineering, civil engineering, bioenvironmental engineering, medical, dental, metal processing, radiology, forestry, and veterinary. From this cross section of talent, considerable progress has been made. They man twenty-five first- and second-class health centers, train sanitarians and midwives, teach dental hygiene, assist the Thai Health Ministry in organizing a dental school, and teach animal husbandry. Rabies control is another of the progressive programs. There are over 300 reported human deaths from rabies each year. Estimates on unreported deaths range as high as 1200. Animal control and inoculation programs have been started, to reduce or eliminate rabies.

In a health survey it was determined that 88 percent of the villagers had internal parasites such as liver flukes and hookworms, and this is common throughout the underdevel-

A Vietnamese elder gets a medical checkup by an Air Force technician of the 3d Tactical Dispensary. Others await their turn for care provided by the medical team.

The Military Civic Action program extends professional veterinary service to pets and domestic animals in Vietnam and other countries of Southeast Asia, in an effort to reduce the number of lives claimed by rabies each year.

oped areas of the world. It is easy to see that these people have little energy for improvement beyond the efforts of bare sustenance. The parasites can be controlled, but it will do little good until basic good sanitation habits become standard. The medical river boat and STOL airstrips, promoted by the 606th, are examples of means used to overcome transportation and communications deficiencies in remote areas.

Area security is one of the prerequisites for a successful civic action program. Two years ago there was some trouble in the area south of Nakhon Phanom from Communist terrorists/bandits. The 606th started the village monitor program to thwart the insurgents. Each of 26 villages was given a series of flag panels to display on the roof of the schoolhouse. Each panel depicted a different message, e.g., all safe, village under attack, Communist terrorist in the area, need medical evacuation. Twice daily a lightplane flew over the villages, covering hundreds of square miles in one hour's time. In the event of trouble indicated by the panels, the observation plane could radio the information back to base and have Thai paratroops dispatched in time to be effective. Prior to this time, it was usually two weeks before government authorities even heard of such incidents due to lack of road transportation and communications; then, of course, it was too late to do anything about it. This plan has since been discontinued because of a decrease in insurgency in this particular area, but here was an outstanding example of how air power can be used to develop national security in remote areas. The 606ACS has been predominantly responsible for assisting the Thai government in accomplishing this objective.

A USAF chaplain and a Vietnamese priest, leader of the village complex of Dai An-Thai Hung, look on as a villager operates a tractor donated by the Catholic personnel of Bien Hoa Air Base, South Vietnam. Civic action encompasses assistance in agricultural improvement projects.

A USAF Military Civic Action officer assis a family in Con Dau hamlet, near Da Nan in rebuilding its home from the ashes of wa

Volunteers from Pleiku AB, South Vietnam teach English in Kim Duc School as par of the civic action nation-building program

There has been less urgency for development of programs around our other bases in Thailand, but we recognize the need to assist the Thai government in nation-building as well as to improve our own image. Manpower spaces have been obtained for an MCA officer and airman to be assigned at each base. As in Vietnam, the objective will be to get an eight-man team assigned to each base to speed the progress.

The major part of the PACAF effort in Military Civic Action has been directed at Southeast Asia, but we are now beginning to direct more attention to the Philippines and Korea. Their problem has been less severe because of reduced internal threat to national security. The Philippines still have some problems with the Huks and still desire much national development. Korea has demonstrated astounding progressiveness; but in view of the North Korean aggressive agent infiltration program, much more can be done to solidify the South Koreans through MCA.

To SORT OUT the major conclusions or principles, there are five that could apply anywhere:

• Civic action programs cannot be motivated by humanitarian principles alone. This does not degrade such activities, but firm self-accomplishment is an absolute requisite for national development.

• The number of U.S. civic action personnel must be kept to a minimum at any one location, for otherwise it would appear to be a program dictated by the U.S. The indigenous people must be in the foreground, with U.S. personnel quietly assisting in the background.

• We must maintain a positive frame of reference. To throw up our hands in despair only indicates that we do not understand other cultures and therefore our objectives will never be accomplished. As Dr. Hirsh says, we can charge in the typical American fashion, à la Don Quixote, and get nowhere; or we can do it their way and progress a little bit. Faced with these two alternatives, the latter would have to be chosen.

• Programs must be kept simple. Grandiose schemes that outstrip existing indigenous technology and capability are self-defeating. The local people must be able to carry on with the program after the Americans depart.

• No project should be started that cannot be completed, whatever the reason, whether it be despair, money, or security. To do so would completely disillusion the local people and make any subsequent effort fruitless.

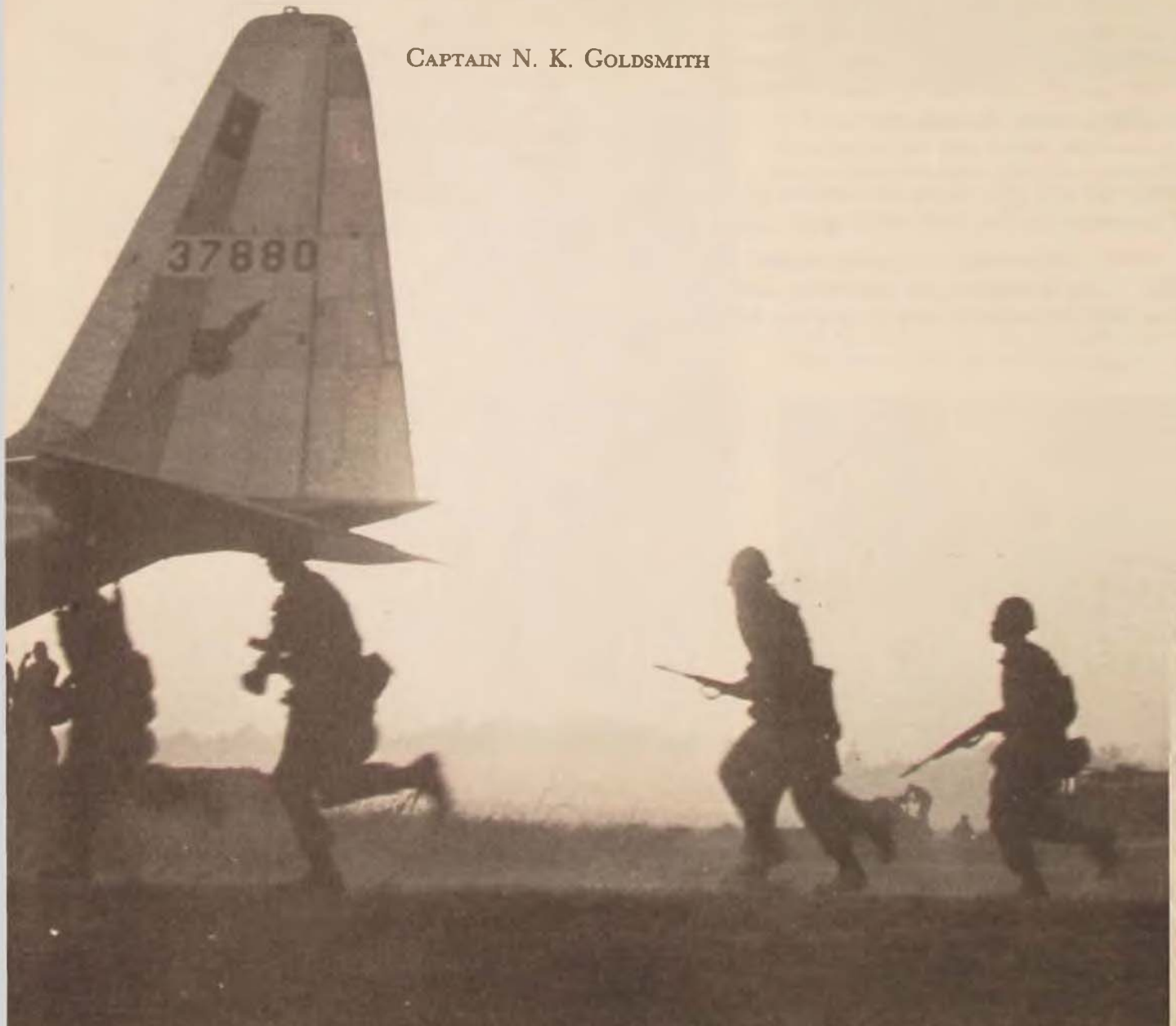
Hq Pacific Air Forces

Air Force Review

TACTICAL AIR WARFARE CENTER

TAC's Secret Weapon

CAPTAIN N. K. GOLDSMITH



A GOOD many years ago, Goethe said, "Power is duty." If this is indeed true, then it follows that to perform that duty requires the most efficient application of the power available.

> The basic planning, development, organization and training of the Air Force must be well rounded, covering every modern means of waging air war, and the techniques of employing such means must be continuously developed and kept up to date. The Air Force doctrines likewise must be flexible at all times and entirely uninhibited by tradition.[1]

Weapons, as instruments of power, have perennially been applied just as rapidly as they were devised, often with disastrous results to the user. The thinking in military circles for centuries was centered upon the idea that having a weapon necessitates using it. That theory changed considerably as it was realized that often owning a gun is more effective than using it. Not only must the effectiveness of a new weapon be evaluated in order to know its worth before employment in combat but also its relative merits as an instrument of power must be determined. In today's environment of rapidly expanding technology and proliferating solutions to military problems, this aspect has become increasingly important.

> We must stop and ask ourselves, before deciding whether to add a new and complex weapon system to our inventory, whether it is really the most effective way to do the job under the rigorous conditions of combat.[2]

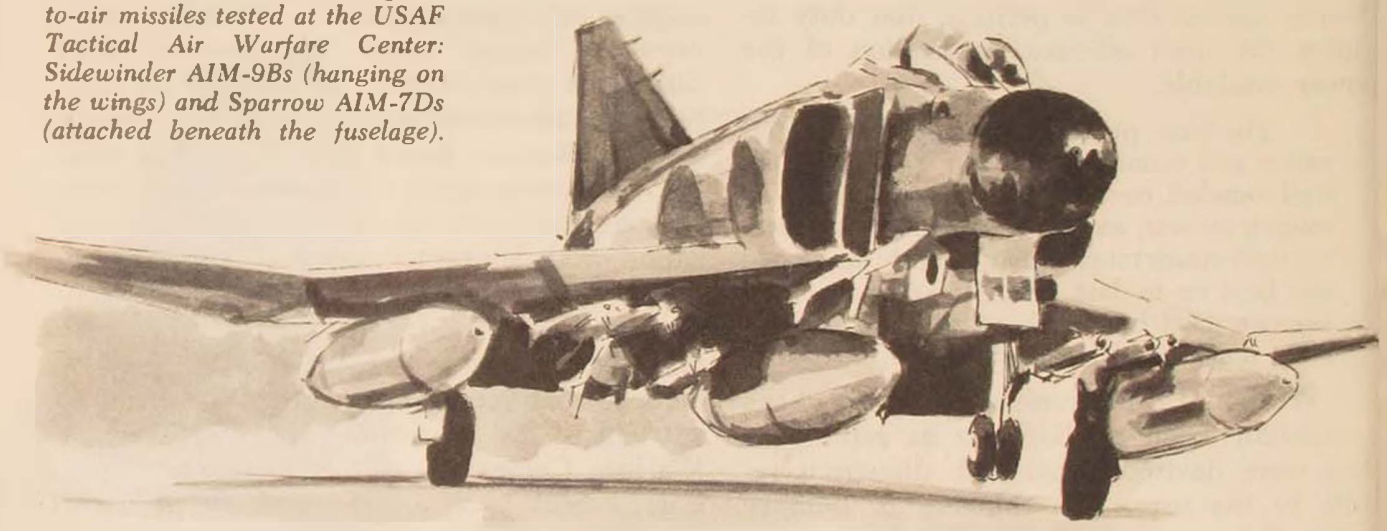
To investigate these new ways of thinking—to assess existing weapon systems and tactics while simultaneously evaluating new ones—the United States Air Force in 1963 directed a study by the USAF Tactical Air Support Requirements Board, commonly known as the Disosway Board. The Army had long felt that propinquity of air power and unity of command were the keys to efficient utilization of air support forces. As a result of the Disosway Board recommendations, the Tactical Air Command (TAC) was directed to develop new concepts for the employment of tactical air forces. This major study effort by TAC led to the formation of the Tactical Air Warfare Center (TAWC) at Eglin Air Force Base, Florida.[3]

The mission of TAWC in 1963 was to improve the Air Force's capability to support Army forces in joint field operations. In order to test the concepts put forth, ". . . the Secretary of Defense called upon the Joint Chiefs of Staff to plan tests and demonstrations relative to the aerial movement and supply of troops in the battle area."[4] This led to Exercise Gold Fire, a maneuver designed to put the theories into practice. TAWC participated in this exercise as the Air Force element for testing and practicing new air concepts and tactics. From this exercise and a concurrent series of field exercises called Indian River, techniques were developed and new concepts conceived to provide improved integration of Air Force strike power with ground units of the United States Army. The lessons learned

in these trials were, and to a great extent still are, the basis for tactical air support of the ground effort in Southeast Asia today. Since concepts, weapons, and tactics are in a continuous state of change, one can appreciate the wisdom of General Eisenhower's advice:

> . . . our armed forces must be modern, designed to deter or wage the type of war to be expected in the mid-twentieth century. No longer can we afford the folly so often indulged in in the past, of beginning each war with the weapons of the last. . . .[5]

An F-4C Phantom II carrying air-to-air missiles tested at the USAF Tactical Air Warfare Center: Sidewinder AIM-9Bs (hanging on the wings) and Sparrow AIM-7Ds (attached beneath the fuselage).



Operations in Southeast Asia illustrate this quite graphically as the weapons employed run the gamut from the venerable C-47 Gooney Bird to the controversial F-111.

As a result of this flux, TAWC is today involved in a variety of test and evaluation programs. In the research and development stages of testing, industry, Air Force Systems Command, and other agencies are primary. It is in the operational test stage that TAWC becomes involved. With the exception of nuclear weapons, almost anything that has to do with tactical air warfare is tested, evaluated, or monitored by TAWC at this stage in the development cycle. The scope now is worldwide tactical application, but special emphasis continues to be placed on tactical requirements generated by our forces in Southeast Asia.

The mission of TAWC is to conduct operational tests and evaluations of systems and components in five areas: armament, night operations, combat support, electronic warfare, and command and control. Test and evaluation, though primary, are only a part of TAWC's job. The mission includes development of tactics, refinement of doctrine, and improvement of concepts, as well as training and deployment of special task forces abroad for the purpose of conducting combat evaluations. New techniques and procedures are verified or modified in this combat phase of the tests.

To accomplish the multifaceted mission of the center, it has been organized with a deputy chief of staff (DCS) for each major area of responsibility. The necessary personnel are assigned to each DCS to analyze concepts, prepare test plans, conduct evaluations, and even deploy for field testing when that is required. It is this functional arrangement which en-

ances the flexibility that must be inherent in n organization such as TAWC.

A brief discussion of the individual responsibilities of each DCS, combined with concrete examples of testing performed, should erve to illustrate how the center operates.

rmament systems

Accurate delivery of munitions from an ircraft has been a problem since the inception f military air warfare. The DCS for Armament ystems was established in TAWC and has the esponsibility for the areas of air-to-air missiles nd targets, guided bombs, and aids to delivery.

In the area of air-to-air missiles, TAWC as examined the Falcon and Sparrow to improve their capabilities and flexibility. Here he primary effort is aimed at taking already perational systems and modifying them to erform a wider variety of roles. Under the ame general heading, TAWC has evaluated ghtweight ground-to-air missiles to determine heir adaptability to the air-to-air environment. With successful results in these tests, ome answers have been given to the recurng question of missiles versus guns in aerial ombat.[6]

Targets used for these missile firing tests ary from the standard towed target to the Mace drone. TAWC has its own Mace launch acility, and other targets available to the enter are the Firebee and the QF-104 drone. AWC works closely with the Armament Delopment and Test Center (ADTC) in the evelopment of new high-speed, highly maeuverable targets, to improve the test and valuation data.

There is a constant need to improve the eliability and accuracy of air-delivered muitions. TAWC has recently been involved in he evaluation of three guided bomb systems. ll three of these weapons consist of modern uidance systems attached to iron bombs, and ll three are showing great promise of giving igh degrees of accuracy under marginal ombing conditions.

Actual flight tests conducted by TAWC ave shown that laser systems can be used to provide an accurate delivery system for bombs. These tests have also demonstrated that terminal guided bombs will give better accuracy at greater standoff distances when lasers are used by forward air controllers to illuminate the target.

This brief look at the activities of the DCS for Armament Systems is admittedly sketchy but should give some idea of where the emphasis lies. National security prevents in-depth discussion of many systems and components.

night operations

> Accurate day and night operations in all weather are essential in maintaining pressure on the enemy, magnifying his requirements for defense, interfering with his production, and attacking movements of troops and supplies which have been driven to rely on the protection of darkness and bad weather.[7]

General Arnold might almost have had Vietnam in mind when he made that statement. Our night air-to-ground operations still have not progressed to the point of being able to stop the enemy's night activities. With this in mind, the Air Staff created a study group under the direction of the Air Force Systems Command, its object to develop a night attack capability within a short time span. This study resulted in the Shed Light program initiated in January 1966.

In August 1966 TAC designated TAWC as its executive agent for the Shed Light program. AFSC is the manager for the research and development, test, and certification of the components. TAC is the manager for the test, training, and deployment of developed capabilities overseas. The DCS for Night Operations is working in the areas of night attack systems, night operational components and subsystems, and Shed Light monitor.

The present generation of illuminators helps in the overt night work, but the effort is insufficient. There is a need for flares that last longer and can be dropped from a variety of aircraft. In addition to flares, aircraft equipped with various high-intensity floodlights are being evaluated.

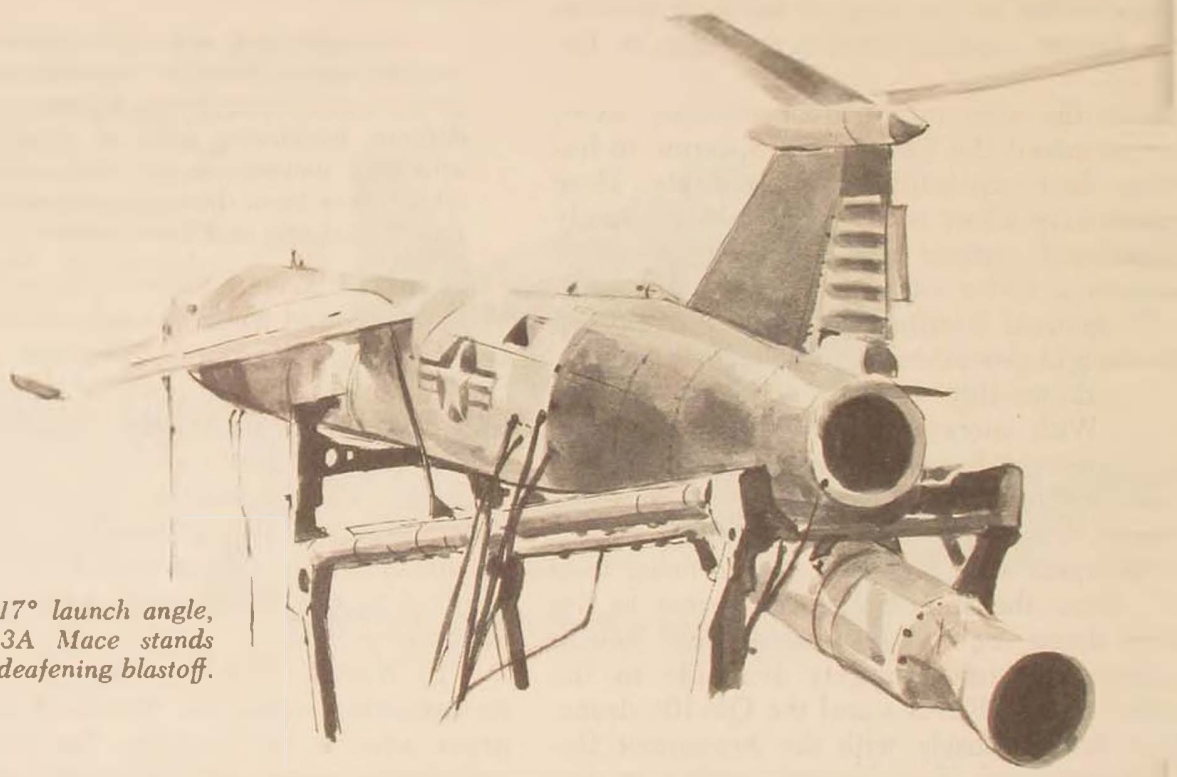
The Gunship is an example of a program

recently evaluated in Southeast Asia. When the night interdiction capability was seen to be desperately needed, TAWC, in cooperation with AFSC, evaluated the Gunship. New night-viewing sensors and fire-control techniques were integrated into a C-130 aircraft.

The Gunship evaluation was highly successful and has resulted in a follow-on program, which is presently being carried out. The goal is a fully operational force of such weapon systems to be used mainly in a night-time close air support and interdiction role.

> rapidly our resources in men and material fo our own defense . . .[8]

TAWC's DCS for Combat Support has th broad responsibility for insuring that our tac tical air combat forces have the ground facili ties available in order to deploy to any spo on earth within twenty-four hours. To be ef fective, our forces must arrive in time to b able to apply whatever measures of force ou nation's authorities require. With this in mind Combat Support is working in the areas o



Raised to a 17° launch angle, the MGM-13A Mace stands ready for its deafening blastoff.

The examples given are fairly representative of the programs now going on in the area of night operations. What is ultimately hoped for is a fully integrated, self-contained night attack system, an F-NX if you will: a production aircraft designed from the beginning with the night role in mind. TAWC's contributions in this area should help to make that long-sought dream a reality.

combat support

> . . . we need well-equipped, well-trained armed forces and we must be able to mobilize

bare base, life support, base support equipment, and air base defense.

The minimum requirements for a bare base are a landing strip and a source of water that can be made potable. It is the aim of the bare base program to insure that these two requirements are the only limitations placed on a deploying tactical operation. Numerous types of equipment in the program are being tested for utility, air transportability, serviceability, and ease of operation by a tactical unit's own personnel. These projects include an expandable shelter container (usable as latrine, kitchen, office, laundry, or quarters), a

multipurpose vehicle (convertible to truck, ambulance, personnel carrier, or tow vehicle), and various units of crash removal equipment. Testing will cover equipment used in all aspects of the basic housekeeping functions normally performed at an air base.

> The Ethiopians were clothed in the skins of leopards and lions, and had long bows made of the stem of the palm leaf. . . . The Libyans wore a dress of leather, and carried javelins made hard in the fire. The Thracians went to the war wearing the skins of foxes upon their heads, and about their bodies, tunics, over which was thrown a long cloak of many colors.[9]

From these descriptions by Herodotus, written about 455 B.C., it is apparent that some thought was given to wearing apparel for the military even then. Though items were selected primarily for identification and for psychological reasons in those days, consideration was also given to individual comfort and protection.

At TAWC, the life-support function is an important and continuing program. The emphasis is on the total equipment required to fit man to his ever changing environment. For instance, a new ventile antiexposure suit has been undergoing evaluation and may well prove to be a major contribution to the problem of exposure in the open sea. It is made from a permeable material which, when dry, breathes without artificial circulation. When immersed in water, the fibers swell by 70 percent, making it a waterproof garment. When it dries out, it returns to its original form. Worn under a conventional flight suit, this chameleon-like material gives comfort and serviceability.

The inflatable operations center tested by the TAWC is composed of two basic modules, which can be inflated and variously combined to form an operations center for a force operating in the forward area.

Another item recently tested was a summer-weight, fire-resistant flight suit. The material, when exposed to flash fire, chars slightly but will not burn and will not adhere to the flesh. However, the density of the fibers created a problem of comfort, and the item was rejected.

Base support equipment involves such items as pre-engineered dormitories, aircraft maintenance shelters, and hardened aircraft protective shelters. Several such projects are

in the process of evaluation at Eglin now, with TAWC participating in many phases of the tests. An example is project "Concrete Sky," an aircraft shelter capable of absorbing enemy ordnance. The arched shelter is erected with steel arch-beams and covered with concrete. Special nylon doors are designed to prevent aircraft damage from shrapnel, napalm, and small-arms fire. This unit is now near completion and will be used to harden revetments in South Vietnam—something long needed there.

> . . . timbers served to bind the building together, and to prevent its becoming weak as it advanced in height; it had also a covering of skins and hides, which protected the woodwork against the attacks of burning missiles and allowed the men to work in safety.[10]

The problem of base defense is certainly not a new one, but Air Force involvement in this area is relatively new. Our ground forces, engaged in limited guerrilla-type warfare, cannot spare the vast numbers of men required to set up a wide area perimeter defense. Evaluations are now being conducted to incorporate the most modern electronic surveillance equipment into a base security system, making it possible to detect and counter attempted infiltration. TAWC is working closely with AFSC in examining the various devices and tactics to be used.

electronic warfare

Aristotle was quite the adviser on many things of a military nature. For example, in his "Politics," he said:

> . . . the strongest wall will be the truest soldierly precaution, more especially now that missiles . . . have been brought to such perfection. To have no walls would be foolish. . . .[11]

We discovered early in the Vietnam conflict just how foolish it was not to have a "wall" against surface-to-air missiles (SAM). TAWC was given the task of working on the problem, and a DCS for Anti-SAM was established.

The AC-130 Gunship combines reconnaissance and strike capability, carrying high-intensity lights and flares for battlefield illumination, advanced detection devices, and four miniguns and four M-61 20-mm cannons.

As the scope of coverage expanded, the designation was changed to DCS for Electronic Warfare. He has the responsibility for insuring the maintenance of air superiority in an electronic environment. These areas of responsibility are being continuously assessed: the improved exploitation of electronic intelligence; the detection, location, and destruction of SAM's; the improvement of electronic warfare equipment and tactics; and the decrease of aircraft vulnerability. Various programs have been evaluated to accomplish the aims. The marked decrease in U.S. aircraft losses over North Vietnam is attributable in part to the equipment devised in this program. The tactical advantages achieved required continued exploitation of electronic countermea-

ure(s) (ECM) and electronic counter-counter-measure(s) (ECCM) techniques to the fullest.

Although the primary mission of the tactical electronic warfare system will be to support aircraft attacking ground targets, it will also have the capability to defend itself from air-to-air attack. The system will aid attacking aircraft by jamming radars and analyzing enemy signals to determine the depth of the penetration environment. Such systems are necessary adjuncts of the force structure which the Air Force requires to meet the demands of the future.

> Equally with the problems of today, the problems which may have to be faced in 1975 or 1985 will require imagination, boldness, and the utilization of available skills, manpower, resources.[12]

To face these problems of tomorrow, TAWC has established a threat and counter-threat staff that lends itself to a red and blue team concept. The red team simulates the hostile electronic environment. The blue team then devises ways to crack that environment. Information and data collected from these encounters are then fed to all interested agencies, and technological means are sought to insure that we stay several steps ahead of any potential aggressor's electronic capabilities.

New aircraft must incorporate measures to reduce their vulnerability to attack. In addition to electronic devices intended to confuse the enemy, tests and evaluations are being conducted in such diverse areas as foam in the fuel tanks for suppression of explosion and fire, redundant flight control systems for added safety, and armor-plating of vital areas in the aircraft.

ommand and control

> The conduct of war resembles the workings of an intricate machine with great friction, so that combinations which are easily planned on paper can be executed only with great difficulty.[13]

The broad concept of command and control had its inception somewhere in the dim reaches of the ancient history of warfare. It is a military requirement which has suffered much, rising and falling with the tides of war. After World War II and the Korean conflict, concern with command and control was neglected in both concepts and equipment but in more recent years, because of the situation in Southeast Asia and other pressing tactical requirements, renewed interest and increased emphasis are being given to command and control.

At the present time TAWC's DCS for this area of responsibility is concentrating his efforts on the Tactical Air Control System (TACS), tactical communications and electronics, and airborne tactical air control. These subdivisions may sound repetitive, and to a certain extent they surely are. A few examples of current projects may serve to illustrate the reason for the shredout.

The Tactical Air Control System is that overall device through which the air commander controls the variety of forces at his disposal. The system itself consists of radar, communications equipment, operations centers, and other support equipment required for field operations. The operational aspect of the TACS encompasses aircraft control and warning, airlift, direct air support, air interdiction, and those planning functions required for the day-to-day operation of the tactical force. In this area TAWC is now actively engaged in the 407L program.

The 407L program is designed to modernize the TACS through acquisition of equipment for aircraft control and warning, direct air support, command communications, and air traffic control. This equipment represents the latest state of the art in miniaturization and mobility and will introduce automation into the TACS. TAWC, in its capacity as TAC's representative for the using commands (TAC, PACAF, and USAFE), participates in the Air Force Systems Command's testing and has complete responsibility for the final Category III tests. All the units for 407L are being placed in a central location as they become available and will be evaluated as a total combat operational system.

Tactical communications covers a broad spectrum of equipment required to support a

field operation. The equipment may vary from data banks to man-pack radios carried by forward air controllers. Current projects include the digital message entry system (DMES), the tactical satellite communications program, and "Combat Video."

The digital message entry system is a system of instant message transmission for use with direct air support radio voice circuits. Messages of predetermined format can be digitally encoded and then transmitted in a fraction of a second. Field evaluation is complete, and the system is now being combat-tested overseas. DMES should appreciably decrease voice traffic on the air request net and reduce the chance of misunderstanding or misinterpretation.

The tactical satellite communications program is designed to demonstrate the feasibility of using spacecraft repeaters to extend the reliable range of command and control communications. This research and development effort will use a satellite in synchronous orbit to relay transmissions from ground and airborne transceivers to test long-range ultra-high frequency and super-high frequency communications. TAC, in cooperation with other using commands, will conduct operational tests to evaluate the practicality of the tactical use of multiple access satellite communications.

Combat Video is a closed-circuit TV to allow the control tower operator to monitor the entire runway/ramp complex. The system is installed at McConnell AFB, Kansas, and testing continues on a daily basis. If it works well, it could prove a valuable training aid and a boon to flying safety.

Several navigation systems are being evaluated for their possible use in tactical operations. The inverse mode tactical air navigation (TACAN), new long-range navigation (LORAN) systems, and improved radar are being examined.

One general objective in command and control is to build a modern airborne warning and control system able to profit by the latest advances in communications. The concept under study is the use of a jet airframe to deploy and control the air operations until ground facilities can be emplaced. At that time the airborne system would be assigned the mission of controlling the forward air battle. This should give TAC much greater flexibility than it now has.

Red Horse

One of the new additions to TAWC is the 560th Civil Engineering Squadron, commonly known as "Red Horse." This squadron was established to conduct academic and field training programs for personnel replacements for all civil engineering heavy-repair squadrons in Southeast Asia. It is also required to maintain a capability to deploy selected permanent-party personnel, augmented by students and/or Prime BEEF (Base Emergency Engineering Force) team members as a contingency civil engineering heavy-repair unit during emergencies.

The 506th conducts evaluations of current civil engineering field construction techniques, materials, and equipment and recommends improvements. Also, it will provide training in specialized areas for selected civil engineering officers and NCO's as requested by TAC.

DURING all the tests performed, the Tactical Air Warfare Center is concerned with the man-machine relationship. Emphasis is placed on the operational environment of the system, covering aircrew, aircraft, ground personnel, and total facilities.

The visible products of TAWC are its test orders, plans, and final reports. The purpose of such documents is to convey usable information to operational organizations and planning headquarters to promote the combat capability of the Tactical Air Command.

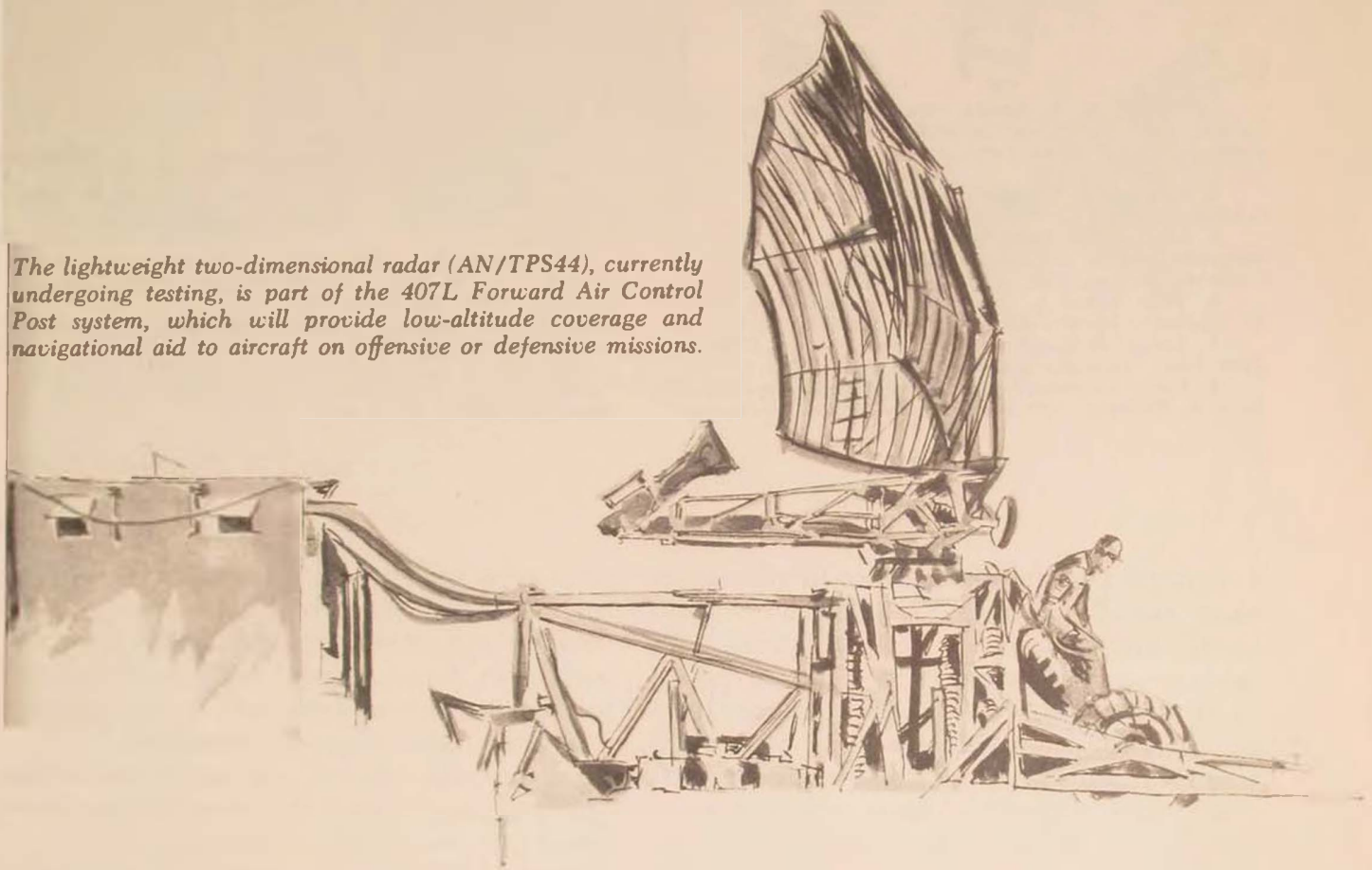
The extreme urgency of tactical requirements in Southeast Asia often obviates the necessity for following classic test lines. Clear-cut lines of responsibility are impossible to draw. Evaluations must be made rapidly and accurately by the people best qualified in a particular field. The tactical centers lend themselves well to this type of flexibility.

It is well to bear in mind that TAWC is not charged with the responsibility for research and development of any item. The responsibility is to exploit tactically items already developed. Tactics and techniques are developed and personnel are trained in the operational use of a new weapon system. Follow-on testing may then be enlarged to explore the weapon system more fully.

TAWC could not and does not operate in a vacuum. Heavy reliance is placed upon the expert assistance of the Armament Development and Testing Center and the excellent facilities available in the vast Eglin complex.

In our mission to attack and solve tactical air warfare problems on a worldwide scale, with special emphasis at this time on Southeast Asia, TAWC is organized according to five main functional areas:

- There is a need to improve our air-to-air missile systems and our air-to-ground delivery techniques. This is the job of our DCS for Armament Systems.
- A capability must be developed to operate at night as effectively as in the daytime. This is the task of our DCS for Night Operations.
- We must be able to operate on a self-sufficient basis under austere conditions in any part of the world. This is the responsibility of the DCS for Combat Support.



The lightweight two-dimensional radar (AN/TPS44), currently undergoing testing, is part of the 407L Forward Air Control Post system, which will provide low-altitude coverage and navigational aid to aircraft on offensive or defensive missions.

• It is imperative that we maintain our air superiority over any enemy. This is the goal of our DCS for Electronic Warfare.

• The tactical air control system needs modernizing, miniaturizing, mobilizing, and automating as quickly as possible. This is the aim of our DCS for Command and Control.

We have great confidence in the concept of cooperative use of Armament Development Testing Center, Tactical Air Warfare Center, Special Operations Force, and Air Force Armament Technical Laboratory organizations as the "team" at Eglin Air Force Base to continue in the quick-reaction role of solving Southeast Asia problems.

Tactical Air Warfare Center

Notes

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3. Lieutenant Colonel David C. Collins, "Doctrine Development for the Employment of Tactical Air Forces," *Air University Review*, XIX, 1 (November-December 1967), 45.
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5. Dwight D. Eisenhower, *Mandate for Change, 1953-1956* (New York: Doubleday and Company, Inc., 1963), p. 446.
6. For a discussion of missiles versus guns, see General Bruce K. Holloway, "Air Superiority in Tactical Air Warfare," *Air University Review*, XIX, 3 (March-April 1968), 2–15.
7. Arnold in Millis, p. 453.
8. President Harry S Truman, "Second Annual Message, January 6, 1947," in Millis, p. 461.
9. Herodotus, "History," *Great Books of the Western World* (Chicago: William Benton, Publisher, 1952), Vol. 6, pp. 228–29.
10. Thucydides, "History of the Peloponnesian War," *Great Books of the Western World* (Chicago: William Benton, Publisher, 1952), Vol. 6, p. 407.
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12. Arnold in Millis, p. 447.
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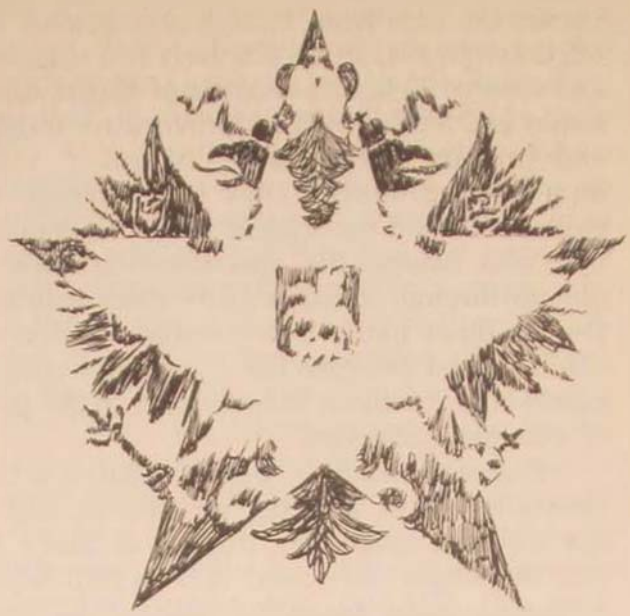
Books and Ideas



SOVIET FOREIGN POLICY: THE RECORD OVER HALF A CENTURY

Dr. Kenneth R. Whiting

FEW endeavors, if any, would seem to be of more importance today than the serious study of Soviet foreign policy. But unraveling its complexities involves much more than merely reading the latest pronouncements of Messrs. Brezhnev, Kosygin, and Gromyko, whose assertions are usually directed more at the befuddlement of their "imperialist" opponents than to the elucidation of Soviet foreign policy objectives. More can probably be learned from an examination of Soviet economic and military aid to this or that nation by studying the trends in Soviet military doctrine, by looking closely at the geographical assets and handicaps of the U.S.S.R., and by analyzing the economic resources available to the Kremlin leaders for the implementation of their strategies and tactics. But the strategies and tactics of Soviet foreign policy, although hedged in and influenced by military capabilities, economic resources, and geography, are in the last analysis determined by the Soviet leaders, i.e., people with all the fallibilities of human beings. These men have been molded by historical, cultural, and ideological factors peculiar to a Communist Russia. Since it is hardly feasible to interview top Soviet leaders in depth or to persuade them to clamber onto the psychiatrist's couch, a study of the record of Soviet foreign policy over the last half-century will have to suffice. It is only through a close study of how the Soviet leaders have acted in the past that we can get some glimmering of how they may tend to act in the present and future. This is no surefire method of coming up with a clear and sparkling crystal ball, but it is the best tool we have, inadequate though it may be.

Studies of that record are legion. Professor Thomas T. Hammond's bibliography lists some 7000 books in 30 languages, and those in English come to a respectable total.[1] Professor Edward H. Carr in his detailed study of the Soviet Union between 1917 and 1927 devotes hundreds of pages to foreign policy,[2] while Louis Fischer, although somewhat biased in favor of the Soviets, has produced a spritely account of the Kremlin's adventures in foreign

relations between 1917 and 1929.[3] Max Beloff carries the saga from 1929, where Fischer left off, down to 1941 in his scholarly two volumes,[4] and George Kennan's analysis of Russia under Lenin and Stalin provides provocative insights and brilliant interpretations of many Soviet diplomatic gambits.[5] Thus the coverage between 1917 and the middle 1950s is adequate; but who except the specialist has time to plough through a dozen fairly thick volumes? On the other hand, is it possible to cram the whole record between the covers of a normal-sized volume without abbreviating to the point of outright distortion?

Professor Adam B. Ulam of Harvard University has made just such an attempt, and on the whole a successful attempt at that.† He gets the whole story from 1917 to 1967 within a single volume, some 750 pages of narrative. He covers the period between the October Revolution and the end of the Second World War in the first half of his book and the two decades from 1946 through 1967 in the second half. The scholarly apparatus (i.e., footnotes, some 981 in all) does not intrude too oppressively. After all, one and one-third footnotes to the page is hardly excessive, and thank goodness Praeger has taken to putting them at the bottom of the page where they belong. There is no bibliography, but since the publication of Hammond's opus it seems hardly necessary to have one in a general account such as Ulam's.

Professor Ulam devotes the first two chapters to getting the show on the road. He discusses those elements of Tsarist foreign policy which have influenced the Bolsheviks over the last fifty years, especially the imperial expansion *cum* a strong Russian nationalism. There is even an analogy between the Tsarist "crusade" to liberate the Slavs oppressed by the Turks and the Hapsburgs and the present Soviet concern with "wars of national liberation." Ulam points out the paradox involved in both cases: the Tsarist rulers over a "prison-house of nationalities" worrying about the Czechs and Croats, who were much better off than the Poles and Ukrainians under the domination of St. Petersburg, and the present totalitarian regime in Moscow weeping crocodile tears about the "victims of colonial oppression" while ruling the last great "imperial" empire. The present regime did learn one lesson from their predecessors, however, that is not to let commitments outrun the military and economic potential of the state.

The Soviet leaders, although influenced more than they like to admit by their Tsarist heritage, are Marxists. Their Marxism, however, is something never dreamed up by St. Karl, as Lenin, between 1902 and 1917, was able to transform the ideology into a fighting faith for ardent revolutionaries by superimposing Marxism upon the underground terrorist tradition of nineteenth century Russia. In addition, Lenin, in his tract entitled *Imperialism* (1916), arrived at a rationalization for Marxist revolutions in industrially backward countries with little or no proletariat, a thesis that would have amazed Marx and Engels. This brilliant reinterpretation of Marxism has had not only a profound influence on Russian foreign policy over the last half-century but has also influenced the thinking of Mao Tse-tung and even Castro in recent times. It got the revolution out of the industrially developed countries of Europe and into the rice paddies and jungles of Asia, Africa, and Latin America.

When the Bolsheviks seized power in November 1917, they had rather primitive notions of how to carry on the foreign relations of a large country—Trotsky, the new Commissar for Foreign Affairs, was going to publish the secret treaties negotiated by the Tsarist regime and then close up shop. One reason for this cavalier attitude was the Bolshevik conviction that the revolution in Russia would trigger similar explosions in Germany, France, and England, thus bringing into being an international socialist world with no need for the traditional diplomacy of the rotten

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†**Adam B. Ulam, *Expansion and Coexistence: The History of Soviet Foreign Policy, 1917–67* (New York: Frederick A. Praeger, 1968, $12.95), 775 pp.**

capitalist past. The present Soviet leadership must look back with nostalgia to such a simple blueprint for relations among Communist states. But the attempt to get out of the war with Germany that began in December 1917 and culminated in the ratification of the Treaty of Brest Litovsk in March 1918 taught the Bolsheviks some hard lessons in diplomacy. As Ulam puts it:

> It marked the end of the age of innocence as far as the Bolsheviks were concerned. They went into the negotiations as world revolutionaries; they emerged as men solicitous mainly about their own state and power. . . . November marked the birth of the Bolshevik Revolution. But the signing of the humiliating and costly treaty at Brest Litovsk marked the real beginning of the Soviet state. (p. 75)

One might add that the main concern of the Soviet leaders from March 1918 to the present faceless regime has been "about their own state and power." Incidentally, as Ulam points out, the treaty imposed by the Germans looked very Draconian indeed between the wars, but since the Nazi and Soviet essays into empire-building in that area of the world, it now looks almost beneficent by comparison.

During the three-year period from the spring of 1918 to the spring of 1921, the new regime had its back to the wall in a vicious struggle to stay alive: the Civil War, almost unparalleled in history for sheer ferocity; the foreign intervention, notable for its inefficiency; and war with the newly liberated Poland. It was also during this period that Lenin created the Comintern (the Third International), which was hailed as the headquarters for the world revolution. The new government in Russia was a pariah in the comity of nations, and the Commissar for Foreign Affairs, Georgy Chicherin, an aristocrat in the service of the proletariat, showed extraordinary skill in coping with the seemingly impossible task of making Moscow's voice heard in the chancelleries of the world. He followed Lenin's policy to the letter: "wait out the period of the greatest weakness and capitalize on any and all conflicts within the bourgeois world." (p. 85)

By March 1921, the Bolsheviks had won the Civil War, made peace with Poland, and were in control of an economically ruined and starving Russia. Even those stalwart revolutionists of the October Days, the Baltic sailors, "rebelled" in their Kronshtadt fortress in early 1921. As a result of all these factors, Lenin promulgated a series of drastic changes in March: the economy was transformed from complete state control into a mixed system in which private enterprise played a major role, and the foreign policy of the nation was directed toward the normalization of relations with the bourgeois states. The New Economic Policy (NEP), the all-embracing name for the changes in policy, lasted until 1928. It was in the NEP period that Chicherin persuaded most of the great powers and a good many small ones to recognize the Soviet Union.* His major diplomatic triumph was probably the engineering of the Treaty of Rapallo with Germany on 16 April 1922, a feat accomplished in the teeth of British and French opposition.

By the early 1920s it was obvious that Western Europe was not about to erupt in revolution, and the Bolsheviks turned to the colonial and semicolonial areas as more suitable for Bolshevik-inspired revolution-making. The main thesis of Lenin's *Imperialism* was that the survival of the great capitalist powers was dependent upon their ability to extract enormous profits from the exploitation of the colonial and semicolonial areas. Therefore, if these areas could be organized to throw out their exploiters, the collapse of capitalism as predicted by Marx would be hastened. Lenin, however, visualized Communist parties as the vanguard of the proletariat, and these areas had little industry and therefore only tiny proletariats. Thus the initial "wars of liberation" would have to be won by the national bourgeoisie, and the embryonic Communist parties should ally with them. Only later, when the industrialization process was proceeding apace,

*Ulam, like most historians dealing with this period, displays a warmness for Chicherin that few Soviet leaders elicit. For a good biographical sketch of Chicherin, see Theodore von Laue's "Soviet Diplomacy: G. V. Chicherin, People's Commissar for Foreign Affairs, 1918–1930" in G. A. Craig and F. Gilbert (editors), *The Diplomats, 1919–1939* (Princeton, N.J.: Princeton University Press, 1953), pp. 234–81. Except for the rather transitory careers of Vyshinsky and Shepilov, there have been only four men at the head of the Soviet Ministry of Foreign Affairs: Chicherin, Litvinov, Molotov, and Gromyko.

would a Communist take-over be possible. Between 1923 and 1927, the Comintern under Stalin's direction tried to implement this strategy in China. The tiny Communist Party of China (CPC) was forced into an alliance with the Kuomintang in an effort to unify China and oust the imperialists. But Chiang Kai-shek, well aware of the long-range goals of his Communist allies, turned on them in 1927 and nearly obliterated the CPC.

Ulam entitles his book *Expansion and Coexistence*, and there is no better period than that of the NEP to explain the significance of the title. Soviet policy in this era was conducted on two levels: While Chicherin was seeking *de jure* recognition of the Soviet Union as a state of the traditional type, the Comintern, financed by, dominated by, and housed in Moscow, was striving to subvert the very governments that the Soviet Union was "coexisting" with. "Expansion" in the 1920s and the 1930s meant the promulgating of the Communist doctrine throughout the world. It was not until the period of World War II that it came to mean the physical expansion of the Soviet Union. Although not spelled out by Ulam, the Soviets over the last half-century have reverted to "coexistence" whenever conditions were not propitious for territorial expansion.

In the 1930s, Stalin, pessimistic about the prospects for revolution in Europe and having burnt his fingers in China when he tried an alliance with the national bourgeoisie, went in for "socialism in one country." The 1930s saw the industrialization of Russia at a forced tempo and the concomitant collectivization of agriculture, with all the horrors engendered by that policy. During the early 1930s, Stalin for all intents and purposes followed an "isolationist" policy in foreign affairs.

Events outside the Soviet Union, however, would not permit such a policy for long. The Japanese had moved into Manchuria in 1931 and were pushing hard against the borders of the U.S.S.R. and its satellite, Outer Mongolia. Hitler came to power in Germany, and even a cursory perusal of *Mein Kampf* was enough to show his ambitions vis-à-vis the Ukraine. To any Russian leader, Tsar or Commissar, the worst of all possible worlds is one in which both ends of the empire are under hostile pressure. Sheer logistics makes a two-front war a Russian nightmare. Under these conditions Stalin opted for "collective security" with Britain and France and went so far as to join the League of Nations, hitherto referred to in Moscow as the nest of capitalist bandits. The Comintern now directed the various Communist parties to ally with any group that was "antifascist," be it the Kuomintang, the British Tories, or the French bourgeoisie.

The moral of Ulam's tale from Brest Litovsk to the present would seem to be that when the security of the Soviet regime is in danger, ideological enemies are welcome as allies. Nowhere was this better demonstrated than during the 1939–41 period. By early 1939, Stalin lost confidence in his British and French allies and in rapid order signed the notorious Soviet-Nazi Pact (August 1939) and an agreement with Japan (spring of 1940). He then sat back to watch the slaughter as the fascist and the democratic capitalists made mincemeat of each other. In June 1941, however, his Nazi "friends" proved to be even more Machiavellian than he, and Stalin had no other recourse than to seek help from the democracies.

Ulam points out that a Communist regime has more to worry about than just the security of the nation. It also has the problem of maintaining the leader's personal regime within the nation. Thus Stalin in the first eighteen months of the war with the Germans could not afford to trade space for time recklessly—he had to sacrifice millions of soldiers in an effort to minimize the German penetration as much as possible. German errors, Allied aid, and, to give the devil his due, Stalin's fortitude enabled the regime to survive the Great Fatherland War and emerge victorious.

Before the war was over, it should have been evident to the Allies that Stalin was determined to fill the vacuums left by the collapse of the short-lived German and Japanese empires. By the time the United States realized that the postwar world would not be one in which the two great powers kept the peace through cooperation in the newly cre-

ated United Nations but one dominated by a "cold war" between a Communist bloc and a non-Communist world of diversity buttressed by U.S. military and economic power, Stalin had established an empire that his Tsarist predecessors might well have envied. It was only in Iran, Turkey, and Greece that Stalin's gambits came a cropper. By October 1949 the Communist-ruled area stretched from West Germany to the Pacific—China alone contributed 3½ million square miles and a half-billion people.

The rape of Czechoslovakia in February 1948 was the last of the Stalinist triumphs. In 1948 the success of the Berlin airlift and the defection of Tito spelled an end to the postwar surge of Russian expansion. The attempt to fill in the rest of the Korean Peninsula in 1950 resulted in the Korean War, an adventure that forced the United States into a military buildup and also forced Russia to convert Mao's guerrilla-type army into a modern military machine. Of all these events, the historian can now see that the advent of "national Communism" in Yugoslavia and the emergence of a powerful Communist China with national objectives at variance with those of Moscow were the two eventually destined to break up the Moscow control of a monolithic Communist world.

The detonation of the first Soviet atomic device in 1949 brought about a new era in the diplomacy of the cold war. No longer could the Soviet leaders treat the doctrine of the inevitability of an all-out clash between the Communist and the "imperialist" worlds in their former cavalier fashion. Malenkov, as early as 1954, spoke of the destruction of civilization if a nuclear exchange came about, and although he had his knuckles rapped for this heresy, his successor, Khrushchev, made new doctrine in 1956 when he proclaimed that such a war was no longer inevitable, i.e., the concept of "peaceful coexistence." Nikita, it seems, had no intention of standing amidst the radioactive rubble of a totally demolished U.S.S.R., even if such a sacrifice might facilitate the triumph of Communism in China or some other heathen region.

As Ulam traces the Khrushchevian cycle of peaceful blandishments and belligerent posturings, the reader might well see an analogy with a chart showing the manic-depressive ups and downs of a mildly psychotic patient. The rapid transition from the "spirit of Geneva" in mid-1955 to the chilly post-Budapest stance of late 1956, culminating in the Berlin "ultimatum" of 1958, was followed by the euphoria of the "spirit of Camp David," which quickly degenerated into the fiasco of the summit at Paris in May 1960. Then Khrushchev, misreading the Bay of Pigs disaster as an indication of a weak Kennedy, tried his Cuban gamble in the autumn of 1962. He had guessed wrong and was forced into a humiliating withdrawal of his missiles. But the ebullient Nikita bounced back and signed the limited-test-ban treaty in July 1963. He not only got a détente with the West but was also able to embarrass his opponents in Peking—the Chinese had either to abandon their nuclear development if they signed or look like warmongers if they didn't. Mao did not cotton to this kind of treatment by Moscow.

And this brings us to the most disastrous of all of Khrushchev's policies, his unsuccessful attempt to dominate Peking. Khrushchev, the doctrine-maker, had already alienated Mao as early as 1956, and the Soviet ridicule of the Chinese *communes* in 1958, plus their refusal to back Chinese national objectives, added fuel to the fires of Chinese resentment. Finally, in mid-1960 Khrushchev stopped economic assistance to China and even withdrew his Soviet technicians, blueprints and all. When the Soviets showed a preference for India in the Sino-Indian conflict of 1962, the Sino-Soviet split became a chasm.

Nikita's whirling-dervish tactics came to an end in October 1964 when his colleagues in the Politburo (then called the Presidium) pushed him into an unsought retirement. Soviet foreign policy has shown little improvement, from a Western point of view, in the ensuing five years. Relations with Peking are, if anything, worse than when Nikita was at the helm; the Soviet Union seems to have been promoted to enemy number one in the Peking scheme of things. In spite of the fiasco of 1967 in the Middle East, the "collective leadership"

seems still intent on playing around with Arab politics—a risky business in the best of times and somewhat like juggling nuclear eggs since 1967. Polycentrism, i.e., the concept that each Communist Party should follow its own national bent, has continued to thwart Moscow's goal of being acknowledged as the doctrinal center of world Communism.

Ulam's last chapter is an excellent summing up of the plethora of problems now facing the Soviet leadership in its relations with both the Communist world and the West. Unfortunately, he sent this book to the publishers in May 1968 before the Soviet leaders launched their Czechoslovakian expedition. Thus his statement that ". . . the old direct methods of Soviet control of the satellites now being a thing of the past . . ." (p. 711) sounds a wee bit optimistic today. On p. 713 there is the following gem: "Military intervention on the order of 1956 was out of the question in view of the vastly changed conditions . . ." (apropos of Rumania). He also comes up with the following attempt at lexicography: "The Soviet Union's troubles with her junior partners (after 1964 this term better describes the East European Communist states than 'satellites'). . . ." (p. 714) Since August 1968, "satellites" reads A-OK. Such minor misreadings of the crystal ball are par for the course in Sovietology, and a rational observer is hard put to anticipate such irrational actions as the Czech affair.

Professor Ulam's attempt to tell the story of Soviet foreign policy over the last 50 years is exceedingly well done. His prose is clear and concise. He keeps the narrative rolling along and even injects a bit of humor now and then. Scholars may miss the usual array of learned footnotes and will certainly bemoan the absence of a bibliography, but for the general reader such scholarly paraphernalia are hardly necessary. Furthermore, any reviewer addicted to nitpicking will find few errors in Ulam's long book. This reviewer began to list a few, such as "Kwangsi" when "Kiangsi" was meant (p. 233) and "Chang Hsueh-liang" comes out "Chang Hsueh-ling" (p. 248), but soon gave up the enterprise as not worth the time. Seldom does a reviewer have a chance to recommend a book so wholeheartedly as he can this one. General reader or scholar will do well to add this volume to his collection of works on the Soviet Union.

Aerospace Studies Institute

Notes

1. Thomas T. Hammond (editor), *Soviet Foreign Relations and World Communism: A Selected, Annotated Bibliography of 7,000 Books in 30 Languages* (Princeton, N.J.: Princeton University Press, 1965).

2. Edward H. Carr, *A History of Soviet Russia* (New York and London: Macmillan, 1950–?). Of the first seven volumes, Volume 3 deals with Soviet foreign policy up to 1923, Volume 4 has material on the 1923–24 period, and Volume 7 has material on the 1924–26 period.

3. Louis Fischer, *The Soviets in World Affairs: A History of the Relations Between the Soviet Union and the Rest of the World, 1917–1929* (London: J. Cape, 1930, 2 volumes; second edition: Princeton, N.J.: Princeton University Press, 1951, 2 volumes).

4. Max Beloff, *The Foreign Policy of Soviet Russia, 1929–1941* (London and New York: Oxford University Press, 1947–49, 2 volumes).

5. George F. Kennan, *Russia and the West under Lenin and Stalin* (Boston: Little, Brown, 1961).

AMERICA AS A MARTIAL SOCIETY

Dr. Russell F. Weigley

Of all the civilized states of Christendom, we are perhaps the least military, though not behind the foremost as a warlike one.

Dennis Hart Mahan

MARCUS CUNLIFFE'S *Soldiers and Civilians*† can be regarded as an extended commentary upon this well-known quotation from the elder Mahan, tending to confirm the accuracy of Mahan's perception of America. Cunliffe believes that in spite of popular suspicion of anything professionally military, a martial spirit was a strong force in early American life. Whether an observation similar to Mahan's would be as true of America after the Civil War is an interesting speculation which Cunliffe's book suggests but does not answer, since its analysis for the most part stops short at 1865.

The book itself has much of the early nineteenth century about it: it is a very large, very diffuse history, literary and impressionistic rather than scientific and rigorously argued in its approach. Perhaps these qualities also reflect the British origin and approach of its author. If so, although in part they are shortcomings, they also suggest one of the book's principal virtues. Somehow Cunliffe's outsider perspective gives cogency to his arguments even when otherwise they are more intuitive and less precise than we might want them to be. He can say things about us that we would not trust if we said them about ourselves. For an American to emphasize the distinctly military qualities of American society as much as he does would seem either too much a boast or too much a *mea culpa*, depending on the point of view. But explored by a discriminatingly observant foreigner, the strong military tendencies of early America seem assuredly real.

Diffuse, sprawling, and meandering the book certainly is. Its loose, rambling organization is so conspicuous a quality—and so likely to infuriate some readers—that it seems best to mention and dispose of the point here at the beginning. To cite a notable example, about two-thirds of the way through his discussion of the national martial spirit Cunliffe interrupts himself to engage in a 50-page debate with historians such as Willard Thorp *(A Southern Reader)*, Rollin G. Osterweis *(Romanticism and Nationalism in the Old South)*, and John Hope Franklin *(The Militant South, 1800–1861)*, who have claimed there existed a distinctively Southern military tradition. The impatient reader will go through much of this chapter wishing that Cunliffe had printed it as a separate article in some such appropriate organ as the *Journal of Southern History* and that he would return to the job at hand, exploring the national martial spirit. Only by the exercise of persistence and patience can the reader come to acknowledge that the apparent digression is not so much a digression after all; that what Cunliffe is saying is that John Hope Franklin and the rest are correct in asserting there was a strongly militant tradition in the pre-Civil War South but that they are wrong in believing that the South was unique in that regard. All pre-Civil War America, says Cunliffe, possessed a strongly militant tradition.

†Marcus Cunliffe, ***Soldiers and Civilians: The Martial Spirit in America, 1775–1865*** **(Boston: Little, Brown, 1968, $12.50), 499 pp.**

More precisely, Cunliffe finds in pre-Civil War America three principal approaches to issues of war, peace, and the military. These are the approaches of the antimilitarist; of the antiprofessional, who shared the historic distrust of standing armies but nonetheless was often warlike or militant; and of the professional military man. These three approaches were embodied in three stereotypical figures of American history: the Quaker, the Rifleman, and the Chevalier. The Quaker "represents one enduring aspect of the American outlook. He stands for simplicity, shrewdness, ingenuity, diligence, decency, piety. A good citizen, he is nevertheless indifferent to the state and resists its demands—especially the demand that he shoulder a musket in its service." The Rifleman is a still more representative American: associated with the individualism of the frontier, undisciplined, so democratic and equalitarian that he is reluctant to obey anybody, impatient of long-term military service but certainly often a warlike figure—the Virginian who marched with Braddock, the Massachusetts Minuteman of 1775, the Kentuckian or Tennessean who fought with Jackson at New Orleans (a rifleman literally as well as archetypically), the soldier of Jeff Davis's Mississippi Rifles in the Mexican War, Johnny Reb and Billy Yank of the 1860s. At the same time, notwithstanding the traditional American dislike of standing armies, the Chevalier, the lifelong soldier, also became a prominent figure of the nineteenth century American scene, epitomized by such soldiers as Stephen Watts Kearny and Philip Kearny in the North and Robert E. Lee in the South.

Cunliffe suggests that virtually all Americans before the Civil War could be more or less fairly represented by one of the three figures—the Quaker, the Rifleman, or the Chevalier—and, significantly, that all three types embody a fascination for war and the military. With the Quaker, the fascination to be sure is of a negative type, but it is fascination nevertheless, hardly mere indifference—Cunliffe cites the war poems of the Quakerish Walt Whitman. Cunliffe argues that furthermore American pacifism has not been so unambiguously pacifist as it might like to seem. He points to Charles Sumner's famous pacifist oration "The True Grandeur of Nations," quotes the passage in which Sumner poured scorn upon the so-called "honor" of the Chevalier Bayard—Sumner lingering all too lovingly over the warlike details—and then reminds the reader that Sumner had once sought a nomination to West Point. Cunliffe also recalls the passage in Edmund Wilson's *Patriotic Gore* in which he suggested the ambiguity of young Abraham Lincoln, in a speech of 1838 asking how men of "ambition and talents" could be content with mere elective office. Lincoln ostensibly was inveighing against military kinds of ambition, but he did so with a curious relish that suggests his casting himself in the very role he deplored:

> What! think you these places would satisfy an Alexander, a Caesar, or a Napoleon? Never! Towering genius disdains a beaten path. It seeks regions hitherto unexplored. . . . It thirsts and burns for distinction. . . . Is it unreasonable then to expect, that some man possessed of the loftiest genius, coupled with ambition sufficient to push it to its utmost stretch, will at some time, spring up amongst us?

Lincoln, of course, did go on to become, though not a Napoleon, nevertheless a great war President, even as more explicitly pacifist Americans went on to take up the sword during the war in which Lincoln commanded.

While thus suggesting that the American antimilitary tradition was not unequivocally unwarlike and unmilitary after all, Cunliffe also argues that much less were the two other American approaches to war, the antiprofessional and the professional, so opposed to each other as they have sometimes seemed. Or perhaps more accurately, he argues that they did not have to oppose each other so much as they sometimes came to do.

Here, interestingly, Cunliffe pursues his argument by taking up the cudgels for Alden Partridge against Sylvanus Thayer. Hardly anything in a book on American military history could be more surprising. Of these two early superintendents of West Point who became such bitter enemies, Partridge grew so obvi-

ously paranoid and so badly deteriorated into a mere pest, while Thayer became so securely enshrined as "Father of the Military Academy" and patron of all that is best in the American professional military tradition, that to reopen the case for Partridge against Thayer seems bizarre and quixotic. Yet Cunliffe manages at least to show that there were two sides to the famous Partridge-Thayer argument. Thayer, for one thing, was an autocrat, who while accomplishing much that was good at West Point also gave it an atmosphere combining some of the worst features of a nineteenth century English boarding school and a monastery. Sound military discipline is one thing while arbitrary tyranny is another, and Cunliffe shows that Thayer often verged towards the latter. More than that, Thayer's autocratic methods were symptomatic of his view of the military profession as a caste set rigidly and exclusively apart. Partridge, on the other hand, wrongheaded though he often was, retained much of Thomas Jefferson's original and noble, albeit vague, notion of West Point as becoming a center for the dissemination of military knowledge not merely through a small regular army but throughout the nation.

The military knowledge of the early nineteenth century, as Cunliffe stresses, was not extremely arcane. If a measure of that military knowledge could have been disseminated widely, as Jefferson and Partridge wanted to do, among a population whose abiding military interests and inclinations are the theme of Cunliffe's book, then the potential for enhancement of American military power should have been great.

The volunteer militia companies of early America were the principal keepers of the popular martial spirit before the Civil War. Cunliffe, unlike Emory Upton and other critics of popular military institutions before and since, does not confuse the volunteer companies with the unorganized militia—the armed masses which were supposed to exist under ancient obligations of universal military service and the Militia Act of 1792 but which actually consisted of little more than muster rolls. Instead, Cunliffe demonstrates that notwithstanding an occasional politician's ritualistic apostrophes to the tradition of Lexington and Concord, the unorganized militia were consistently regarded as a joke from the 1790s onward, not only by professional soldiers but by almost everybody. Cunliffe recognizes that the volunteer militia companies were also often funny. They were ridiculously romantic, as he amply establishes by printing a wealth of contemporary sheet-music covers and verses about them. "There is a thread of make-believe running through the whole affair. The huge warriors, bold as brass, seem only half-size when they are in their drab usual clothes. The people gazing on them from the sidewalk are never quite sure whether to cheer or to guffaw."

Yet in the years before the Civil War, Cunliffe argues, the Regular Army was not so different from the volunteer militia companies. There was plenty of romantic posturing among the American professional soldiers of the early nineteenth century as well as among the volunteer militia, as reference to the careers of such professionals as Winfield Scott and P. G. T. Beauregard so clearly demonstrates. If much of the activity of the volunteer militia companies was political rather than military, Cunliffe shows that the same was true of the officers of the contemporary Regular Army. And because the professionals of the day remained "insufferably" arrogant in their attitudes towards any military enthusiasms or pretensions not sanctioned by West Point, they committed a more grievous error than any of which the volunteers were guilty: they blinded themselves to the very foundation of America's potential military strength and deprived themselves of the full utilization of that strength. The reservoir of potential American military strength lay in the martial spirit embodied in the volunteer militia companies. Despite romanticism, posturing, and undoubted amateurishness, the volunteer militia companies represented the warlike quality referred to by Dennis Mahan, a quality which at last asserted itself with overwhelming force in the Civil War. In that war the amateur soldiers showed an impressive military character, not only bravery and endurance but even admirable military leadership:

> If a number of volunteer generals displayed mediocre talent, so did the majority of West Pointers, especially those who had hung on in the regular army on obscure or purely technological assignments. Volunteer or regular, the problem was to find men who would fight, and who could control large-scale operations. The capacity of an officer to profit from experience was the vital factor. There was no arcane body of doctrine revealed only to regulars as the reward of a lifetime of study. As [the volunteer Major General Jacob D.] Cox remarked, the principles of war were in essence so brief and simple that they could be printed on the back of a visiting card.

To the extent that Cunliffe's diffuse book presents a central argument, the heart of it is this: that contrary to many historical impressions, a martial spirit permeated American society before the Civil War, expressing itself especially in the volunteer companies though of course also in the Regular Army, and that despite their posturing the volunteer companies had real military worth and could have had more if they had been better used.

Of course, the art of war has become a lot more complex in our day than it was in 1865, and Cox's remark about the principles of war recalls us to the question of the book's relevance to subsequent American history and to the present. Even if one acknowledges that a popular martial spirit might retain military utility despite the growing complexities of war, he must wonder how much the "martial" America which Cunliffe describes was a phenomenon of the preindustrial age, declining with the rise of industry about the same time the Civil War was ending. After the Civil War, enlistments in the National Guard failed to keep pace with the growth of population. Other evidence, less tangible than statistics, also suggests that the organized militia never again commanded quite the enthusiasm stirred by many of the volunteer companies before the Civil War.

Perhaps the urban, industrial age simply provided too many competing claims upon the time and energy that once might have gone into the volunteer companies. Cunliffe notes that the pre-Civil War companies expressed local and regional loyalties which later attached themselves to organized athletic competition. On a deeper level, perhaps the disciplines of the new industrial world were incompatible with perpetuating the kind of martial spirit displayed by the hunters of Kentucky or even Elmer Ellsworth's Zouaves. Cunliffe does touch upon the post-Civil War era enough to suggest that American society became "possibly even more civilian in outlook than before." But a book carrying Cunliffe's study into the post-1865 permutations of the martial spirit would now seem something we should have.

Especially it would seem so because, for all the diffuseness of his book, Cunliffe has taken the topic to the end of 1865 so ably, with imaginative use of both well-known sources and neglected ones. At the head of his bibliography he writes that "Fresh vitality has been imparted to the study of military affairs by such scholars as . . . [who] have demonstrated that it might be used to shed light upon American society as a whole." Certainly Cunliffe himself has admirably carried forward the work of giving fresh vitality to American military history. And however much the years following 1865 may have modified the martial spirit, his book valuably calls attention to a principle that cannot be reiterated too often: If the American military would serve their country to the best of their ability, they must know and understand the country as well as they can. In the years studied by Cunliffe, the professional military became so exclusive in their dedication to themselves as a professional caste that they failed to know and understand the society they served, and their service was hampered accordingly; they failed to exploit as they might have the resources of the popular martial spirit. After the years covered by Cunliffe's study, Emory Upton, extending the attitudes which Sylvanus Thayer had cultivated, perpetuated the belief that military virtues were absent and military potential limited in American civil

society. Let us hope that in this regard, at least, the era of American military history which Cunliffe describes is an era that is wholly past.

All through the reading of Cunliffe's book, the current debate over the merits of an all-volunteer army as a substitute for selective service lay in the back of my thoughts. All that I have said about Cunliffe's stopping short in 1865 suggests my certainty that circumstances today differ so much from those of the nineteenth century that it would be foolish to attempt to find in Cunliffe's pages any very explicit guidance for present-day military policy. But in reading Cunliffe I could not help reflecting on the implications for the present debate about selective service that lie in his description of the nineteenth century volunteer army's growing separation from the military inclinations of the American population at large. In the population at large, Cunliffe is saying, there resided powerful martial impulses that could greatly have enhanced American military strength—yet the nineteenth century volunteer army was so constituted that it was less and less able to tap those impulses, or even to recognize them. The all-volunteer Regular Army was incapable of drawing upon the full military potential of the nation. No one would claim that in our very different circumstances today such a condition would again inevitably follow from a modern all-volunteer army. But I suggest that nineteenth century American military history is at least relevant enough that those involved in the current debate would do well to read and ponder Cunliffe's history as well as the contemporary polemics.

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AWARD

The Air University Review Awards Committee has selected "Military Professionals as Policy Advisers" by Lieutenant Colonel William E. Simons, USAF, as the outstanding article in the March-April 1969 issue of Air University Review.

ATTENTION

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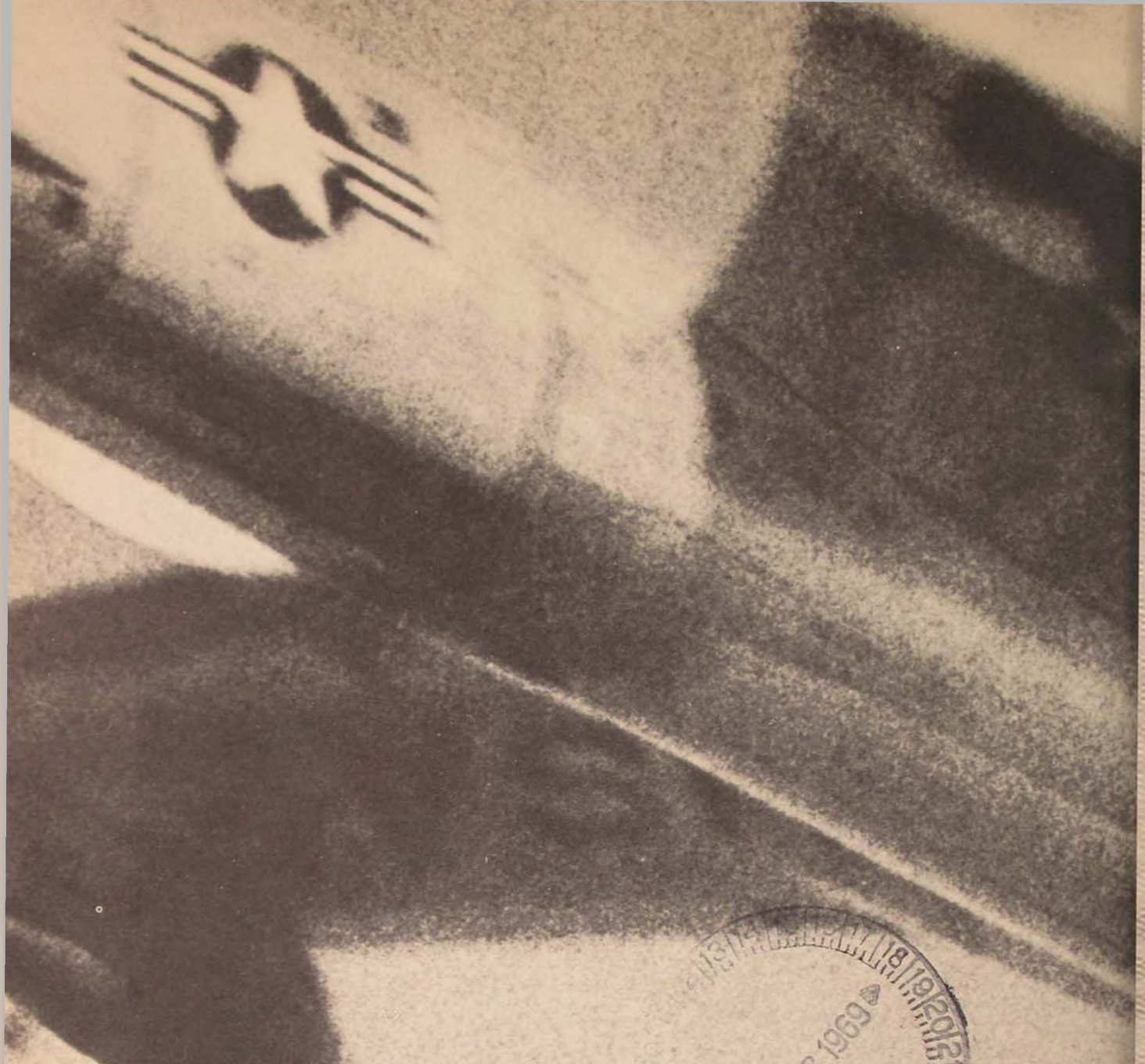

UNITED STATES AIR FORCE AIR UNIVERSITY REVIEW

AIR UNIVERSITY review

JULY-AUGUST 1969

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