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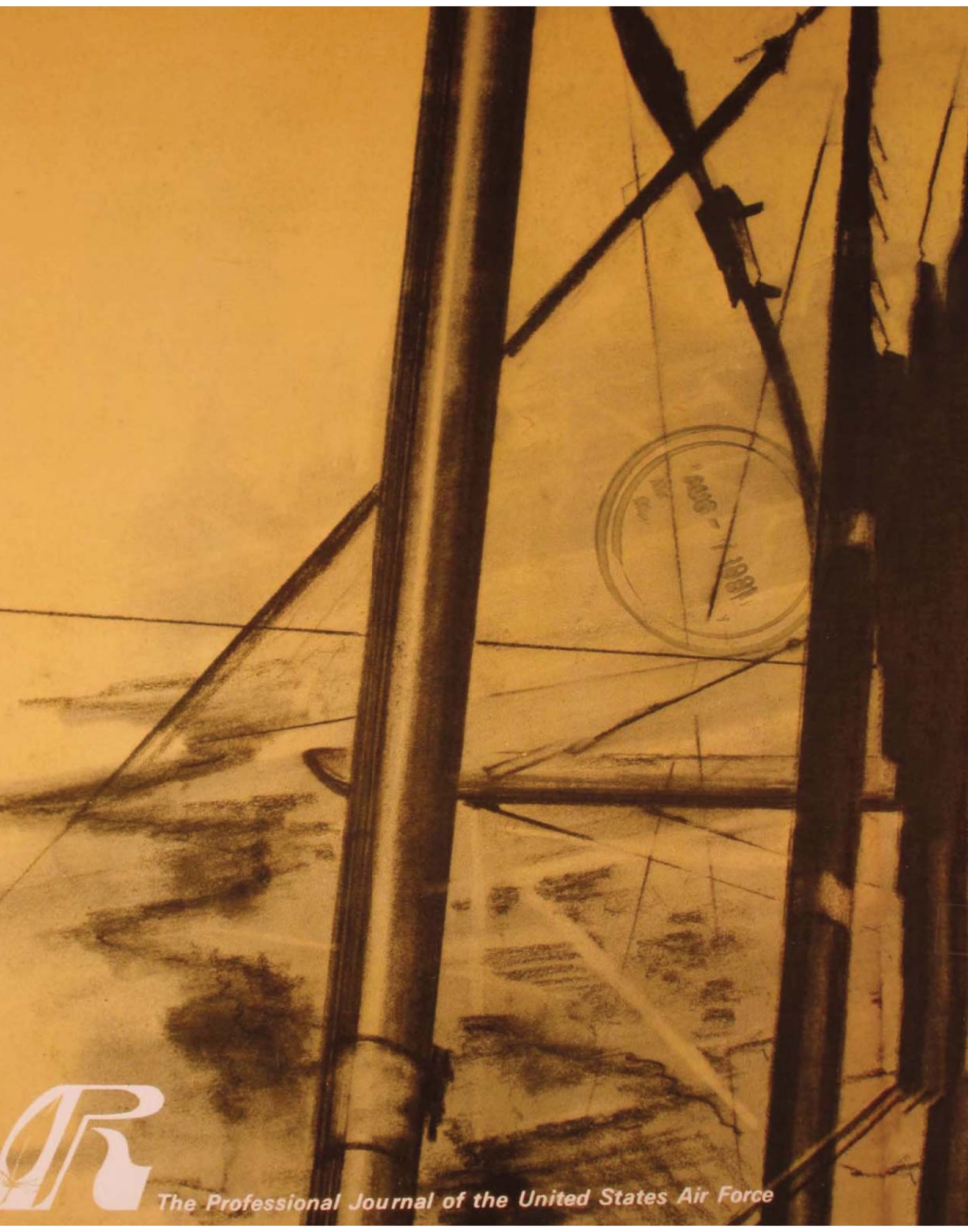
assassination, anarchy, and terrorist atrocities

weapons in the great power conflict

The attempted assassination of Pope John Paul II may seem unrelated to the nuclear balance, control of sea lines of communication, and the clash of armor on the plains of Germany. Yet it can be seen as a psychological counter in the struggle between the central command system of communist powers and the less-structured system of Western democracies.

Traditional military theory teaches the value of interior lines: that the adversary who holds the central position can communicate with and resupply his forces on the periphery quicker and more securely than an opponent who holds the outside position. Mao Tse-tung stood this truism on its head and postulated the superiority of exterior lines, especially in the logistically undemanding guerrilla warfare that was his forte. Interior lines are easier to discover and always lead to the organizational center, the brain of the adversary. The element of surprise is on the side of the attacker whose actions cannot be traced.

In a world in which conflict at the lower level has increased in sophistication, the power of exterior lines cannot be ignored. Soviet dogma preaches a state of permanent struggle, yet except for success in the nuclear and conventional military catch-up game, the outlook for the Kremlin is grim. Economically, agriculturally, and even in energy matters, the U.S.S.R. is slipping. But the most dramatic loss has been moral.

The well-worn and much-misunderstood Napoleonic dictum about the predominance of the moral factor over the physical in warfare applies equally to struggle short of declared war. Helped by Hitler's incredibly stupid and cruel handling of the war on the eastern front, the Soviet Union has played the hand of moral superiority with a certain amount of skill. A country and a system that sacrificed so much and gave hope—and a brief illusion of liberty—to those who suffered under the brutal Fascist yoke banked a lot of moral power.

But lately, despite Western mistakes, the overall moral balance has changed in favor of the democracies, especially since the end of the Vietnam War and the catharsis of Watergate. Notwithstanding communist efforts to portray the CIA as villain of the piece and no matter how often Western powers have played into that hand, the Soviet record has been worse. The invasion of Czechoslovakia left a far deeper mark than that of the Dominican Republic; the invasion of Afghanistan had none of the redeeming features of the overthrow of Allende in Chile.

Although this makes little difference in the Soviet Union, most of the Third World has ceased to believe in Soviet motives of altruism. Since concern over freedom for the downtrodden has lost all credibility as a Soviet stance, a new appeal is being subtly touted. With every act of terrorism, with every assassination in the West, the quiet word from Moscow is: "This cannot happen with a strong communist government." The fear of anarchy is loosed upon the Western world, and nowhere is it more evident than in Italy, where the communists are now the party of law and order, just as Russia is the conservative superpower where people do not get gunned down in the street.

To get back to indirect lines, few assassins can be traced to any communist plot. Certainly the majority of them would discount such an idea themselves. The fact that the latest Turkish madman obtained his 9 mm Browning in Bulgaria is probably not significant. His right-wing connections are possibly impeccable, but one must wonder where the end of all the loose strings leads.

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THE TOURNIQUET AND THE HAMMER

a new look at deep interdiction

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SEEN in retrospect, the bombs that tumbled from the bays of the heavy bombers over Ploesti, Romania, during World War II demonstrate well the complexities and interrelationships that spelled strategic Allied failure in the well-publicized, low-level attack of 1943 versus the little understood but decisive success of the bombing efforts of 1944. Modern critics of strategic bombing and deep interdiction would do well to ponder the difference between the air efforts of 1943 and those of 1944 over Ploesti and consider what lessons they may hold for tactical and strategic air forces today.

Conventional wisdom has come to view deep interdiction primarily as behind-the-lines air attacks against enemy transportation systems for the purpose of destroying or delaying "the enemy's military potential before it can be brought to bear effectively against friendly forces."[1] But in my opinion, by describing only a part of a larger process in the air interdiction attacks of World War II, the conventional viewpoint has misdescribed one of the fundamental principles of successful deep air interdiction and strategic air attack.[2]

In terms of the military objectives, I find much overlap between the presumably tactical mission of interdiction and those of strategic air attack as well as a significant difference. The conceptual and employment similarities and differences between the two mission categories are also examined. Deep air interdiction in this article is the employment of long-range combat aircraft or missiles in offensive air operations against enemy economic and logistic targets, both fixed and mobile, for the purpose of catastrophically weakening enemy resistance.

A new look at successful deep air interdiction in World War II then suggests that:

—successful deep interdiction is produced by closing a cycle of destruction on some important factor or factors of enemy strength;

—this cycle of destruction requires a measure of control over all three elements of enemy war supplies: the sources of war material production, the movement of supplies to the battle area, and increased consumption in combat;[3]

—successful interdiction is a long, difficult, but effective air strategy; and

—neither the grinding repetitions of interdiction nor a single dramatic strategic attack is likely to win wars alone but only when combined.

Even if not widely appreciated at present, the basic tenets of deep interdiction are simple, and clearly they are not new at all.[1] The common objective of all successful interdiction is to so enfeeble enemy resistance that the invading armed forces can effectively achieve whatever constitutes the political goal of the war. Stated that way, it may be easier to understand that the major mechanisms in interdiction are cumulative denial and debilitation rather

than an annihilating lightning blow. Contrary to much preuse expectation, interdiction squeezes rather than strangles, hence the first part of our title. Consequently, deep interdiction is a very likely strategy for the nonnuclear or limited wars of the 1980s and '90s. I suggest, then, that interdiction can be an extraordinarily effective strategy when used correctly; for, when the tourniquet of deep interdiction is properly applied in coordination with the hammer of a lightning psychological blow, the minds of extremely recalcitrant, determined, and independent leaders are changed, and wars are won.

The epic low-level raid against the oil refineries of Ploesti, Romania, in August 1943, and the aerial siege against those same refineries in April through August 1944 provide not only a case study on the growth of air power. They also give an opportunity for examining both successful and unsuccessful deep interdiction efforts under very similar settings. By contrasting the effort of 1943 to those in 1944, we can focus on the key factors of success, something we would not otherwise be able to do for an undertaking that is as enormous, costly, complicated, and human as deep interdiction.[5] With a clearer appreciation of the nature, limits, and capabilities of deep air interdiction, we can better evaluate the importance of the Allied air forces antioil campaign in World War II and its critical contribution to the destruction of the Luftwaffe. Readers can then better judge for themselves the utility of deep air interdiction as a part of military strategy for winning the potential national conflicts of the present.

The Epic August Raid

Considering the state of the bomber's art and the fortunes of the Allies in 1943, the dramatic August raid was well planned, prepared, and launched. Ninth Air Force planners grouped the boiler houses, cracking plants, and distilling units of the nine major oil refin-

eries in Ploesti and nearby Campina into seven target sets. A fairly large strike force of 177 B-24s was assigned to the targets. Air power leaders decided that low-level attack was the most likely method for destroying the targets or for producing severe and lasting damage. Training the crews in low-level combat flying and target acquisition required substantial time and effort. When the training and preparations were complete, the mission was launched from Allied bases in North Africa across the Mediterranean to Romania.[6]

The raid was launched 1 August 1943. Through a complex series of events en route, Colonel Keith Compton, who commanded the lead group, made a serious navigation error when nearing Ploesti. That error and a radioed release to targets of opportunity by Brigadier General Uzal Ent, the force commander, caused significant confusion over the target. The B-24 Liberators of the 376th Bombardment Group and those of the 93rd Bombardment Group skimmed over or near Ploesti or Campina from the east and south, respectively, while the other groups came roaring in also at low level from the north and west as originally planned. The results on the target were spectacular but somewhat disappointing, and the results on the attackers were heavy and decisive.

Conceived as a one-time, low-level knock-out punch, the August 1943 raid temporarily knocked out 40 percent of the throughput capacity of the oil refineries and 42 percent of their cracking capacity. The attackers lost 53 of the 177 participating American aircraft, 55 more were damaged, 440 men killed or missing, and 79 men interned.[7] Ploesti recovered in a few weeks.[8] The Allied costs in men, time, and materiel in training for the mission and the permanent loss of many of the attacking bombers and crews virtually precluded additional follow-on strikes.

At the time of the raid, Ploesti was processing all of the crude oil that could be piped in by using only 60 percent of total refining capacity.

Rapid repairs and rerouting to undamaged and previously idle facilities enabled the Ploesti refineries quickly to produce at greater rates than before the raid.

When planning the details of the 1943 raid, air power leaders did not raise their planning horizons beyond the theater level (that really came later with the formation of the U.S. Strategic Air Forces in January 1944); nor had they adequately dealt with all the elements of the interdiction equation. They sought to destroy a major producer of enemy war materiel without considering the necessity for attacking the movement of that materiel to the battle area nor its enforced consumption in combat. There was little or no early appreciation of the relationship of interdiction elements with each other and their applicability to strategic bombing.

Full of the heady concepts of strategic bombardment so courageously espoused by Brigadier General Billy Mitchell and Giulio Douhet and possessed of the first large and reasonably accurate heavy bomber force in history,* many World War II era air planners and directors believed that one or a few raids would constitute such a smashing hammer blow to the exposed and inflammable refineries that they would be removed from the war.[9] Recovery from such a blow, if it were possible at all, would surely take so long as to yield many opportunities for finishing the job with a return raid. In the light of such reasoning, the daring low-level strike could be seen as decisive in itself. But, as illustrated here, the pattern of success in aerial bombardment includes both the hammer and the type of interdictive preparations symbolized by the tourniquet.

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*Some devotees of the Royal Air Force or the Luftwaffe would no doubt contest this statement, but consider the evidence. Both of them came to favor area bombing; Air Chief Marshal "Bomber" Harris expressed doubts about the accuracy limits of his command or any other; and the Luftwaffe failed to mass produce a four-engine heavy bomber. One is left with the belief that the United States had produced the first large, reasonably accurate heavy bomber force in history. In the crews, aircraft, and supporting elements of the U.S. Army Air Corps, the air bombardment force only dreamed of earlier was created and employed in battle.

The Siege by Air

Deep interdiction took on a new scale and comprehensiveness in the antioil campaign of 1944. By the end of that year, the Allied oil interdiction campaign had attacked both natural and synthetic oil facilities in Germany, Austria, and Romania. The aviation and motor gasoline of the Luftwaffe and Wehrmacht provided a common type of target for both the Eighth Air Force in England and the Fifteenth Air Force in Italy. The importance of aerial fighter escort was well recognized.

In contrast to the Ploesti raid of 1943, the bombers in 1944 did not neglect the second element of air interdiction: attacking the movement of supplies to the battle area. The Royal Air Force (RAF) dropped thousands of magnetic mines into the Danube River. There the mines destroyed some petroleum products coming up river by barge, and they held up other shipments of oil while the Axis conducted minesweeping operations. Such a holdup tends to congregate, compress, and make more visible the traffic upstream of the bottleneck. In Romania, the Combined Bomber Offensive attacked pertinent rail marshaling yards while the U.S. attacks on the Ploesti refineries assumed the character of a siege.

This aerial siege of the oil refineries began on 5 April 1944 with a high-level daylight strike of more than 200 B-17 and B-24 aircraft accompanied by P-38 and P-47 fighters. Despite partly overcast weather, the bombers visually aimed and dropped 587 tons of bombs onto the target area. On 15 April 1944, 137 bombers followed up the first strike with another. Damage was considerable from both raids. More attacks followed on 24 April and on 5 May.[10]

Through a combination of warning systems, antiraid procedures, and dogged rebuilding, Ploesti remained surprisingly resilient in the face of repeated aerial bombardment. One of the more effective procedures was to increase the use of smoke pots to obscure the target area.

Large raids of 761 and 377 bombers took place on 23 and 24 June, respectively, but smoke screens at Ploesti forced both groups to resort to blind bombing into smoke. Later it was learned that only one refinery had been hit by the large raids. In July, the H2X radar method was used to bomb through the smoke screen with mixed results. Later assessments showed the hits from the raids to have been largely haphazard. A few raids produced better results. Nonetheless, the quality and the quantity of German opposition indicated that the defenders still considered Ploesti to be worthy of protection.[11]

The aerial siege continued with little letup until Ploesti fell. On 10, 17, and 18 August 1944—1039 Liberators and Flying Fortresses dropped 2200 tons of bombs on the active refineries in little over a week. The once aggressive German fighter defense had suddenly deteriorated; the bombers were able to attack in such a long stream that the smoke screen thinned considerably before the attacks were over. Sixty-five bombers followed up on 19 August, the third consecutive day of air strikes, to keep the fires burning. The RAF attacked at night. Oil production at Ploesti dropped to about 10 percent of original capacity.

At the end of August 1944, the Red Army arrived and took possession,[12] but for the real success of the Ploesti attacks we have to take another look at the skies over Germany and German-occupied Europe.

Ploesti, August 1943

The dramatic raid on Ploesti, Romania, oil refineries by Ninth Air Force B-24 bombers on 1 August 1943 temporarily destroyed about forty percent of the area's oil production capacity but at such expense in American men and planes as to preclude follow-on strikes. The Colombia Aquila refinery (above) already sustained great damage, and more B-24s followed. Colombia Aquila after the raid (facing page) clearly shows the path of devastation as the bombers proceeded from left to right (arrows).

Oil Interdicts the Luftwaffe

In the antioil campaign, the Allied air forces used all three elements of successful air interdiction to create a cycle of destruction in which the strength of the Luftwaffe was catastrophically weakened. The bombers sought to destroy the sources of supply (the first element); they disrupted its movement to battle by bombing or mining the transportation systems (the second element); and when Allied fighter escorts joined with the bombers, the combination forced the consumption of enemy aviation gasoline, pilots, and planes in combat (the third element). Thus, the antioil campaign provides us with a model of a successful air interdiction campaign, and remarkably enough it contained all three elements within itself without a major reference to ground action.[13]

With aviation gasoline in short supply and with the sources of production under threat, the Germans in 1943 and 1944 had faced a relentlessly narrow set of choices: curtail air

training to favor operations; curtail current air operations in favor of continuing a high level of training; or curtail both somewhat in an effort to share the shortage. Heavy Allied bomber attacks on significant political, economic, and logistic targets made the German choice an excruciatingly difficult one. The Luftwaffe decided to curtail pilot training flying with the result that pilots were sent into combat with less and less flying experience. It was this lack of well-trained pilots that proved to be the source of the Luftwaffe defeat in 1944.[14]

Offensive Allied bombers were an irresistible target for the Germans, and Allied fighter escorts attrited them in combat. Like a drowning man struggling for air, the Luftwaffe needed ever more aviation gasoline as less and less could be found.

So long as the Allied bombers were attacking vital targets deep within Germany, the German fighters had little choice but to oppose them. In the battles of skill and attrition that

ensued, the lesser-trained pilots of the Luftwaffe suffered higher losses than the accompanying P-51 and P-47 escorts, and ever greener groups of German pilots were hastened forward to replace the losses. In the end the oil shortage required that even operational flying be sharply curtailed because of the increasingly successful antioil campaign. The cycle of destruction was complete. By the summer of 1944, the offensive and defensive strength of the Luftwaffe had been significantly debilitated, and the constant pressures of the air campaigns and the increasing waves of Allied ground attacks acted together to keep the Luftwaffe from ever recovering.[15]

One does not need an extraordinary imagination to conceive of an entirely different outcome for the war in Europe. He need only juxtapose the burgeoning German production of jet fighters (which used a fuel not in so short supply as aviation gasoline) with an opportunity for the Luftwaffe to stand down to accumulate sufficient stores to make its transition to jets complete. With sufficient jet fighters for defense and V-weapons for offense, Germany might have fashioned a very different war in 1944-45. None of the elements of air interdiction should be overlooked, nor were they in the antioil campaign of the Allies in 1944.

Concerning Tactics

What lessons in tactics and doctrine should one draw from the interdiction of oil, the Ploesti raids, the seesaw battle between destruction and recovery, and the aerial exhaustion of the Luftwaffe? It is always dangerous to assume that the lessons of the past apply to the present. Nevertheless, four tactical lessons still seem to be pertinent. They are presented in the form of an analogy.

If one thinks of deep interdiction as an effort to amputate a man's leg by means of a tourniquet, then four tactical lessons from Ploesti can be stated as follows: apply the tourniquet to the right place, get the tourniquet all the

way around the limb, expect the job to be tough and long, and never loosen the tourniquet.

• Apply the tourniquet to the right place. This first lesson requires much prehostility preparedness on the part of the interdictor: the careful gathering and evaluating of information on various industrial, military, and transportation systems of likely adversaries and the maintaining of military forces sufficient to act upon this information. The goal of such large and expensive undertakings is to assess the vulnerabilities of potential enemies and exploit them when necessary. Satellite and aerial imaging systems can provide an enormous amount of information about what is observed. It is difficult, however, to see indoors. Even with the technologies of the twenty-first century, we shall still have difficulty improving on Sun Tzu's ancient adage: "Know the enemy and know yourself; in a hundred battles you will never be in peril."[16]

Correct assessment of the enemy's vulnerability is critical to success in deep air interdiction. The converse of Sun Tzu's adage might have been demonstrated at Ploesti: "If ignorant both of your enemy and of yourself, you are certain in every battle to be in peril."[17] Oil production recovered surprisingly fast, partially because unexpected idle capacity could easily be brought on line to replace losses.

• Get the tourniquet all the way around the limb. The second lesson calls for a comprehensive and all-inclusive approach to targeting and implies the kind of large-scale effort seen in the 1944 antioil campaign. Compare the military, industrial, and transportation systems of a healthy nation with the dynamic processes of the human body. Damage is repaired, constrictions are bypassed, and attacks rebuffed. Unless the attacker can unify his efforts in time, space, and objective to close the cycle of destruction on his foe, the attacker can expect to receive attention but not success.[18]

• Expect the job to be long and tough. The third lesson is singularly unattractive to the

air-minded. Since Douhet, the lightning hammer blow from the skies has been seen as the ultimate in warmaking; but, as I have indicated, it is the long, tough job of imposing cumulative deprivation on an opponent that prepares him for the psychological shock of the hammer. Without the tourniquet, the hammer blow is shrugged off, and recovery is possible and probable.

One could restate the third tactical lesson as follows: despite expectations, one or a few air strikes were not going to knock out anything of value to the Germans. But did not this precept also apply to our interdiction experiences in Korea and Vietnam?

If a task is foreseen to be difficult, it does not necessarily follow that it should not be undertaken. A realistic assessment of interdiction benefits and costs may well mean that it is not lightly undertaken to accomplish inappropriate objectives. Just as realistically, however, deep air interdiction may be selected as a useful and effective strategy for accomplishing appropriate goals.

• Never loosen the tourniquet. This is the fourth and last tactical lesson from the analogy of the tourniquet. Interdiction is by its very nature a tactic and a strategy of cumulative deprivation. Periodic relaxation of pressure is the opposite of what is required for successfully closing the cycle of destruction on your enemy. Such "loosening" can only leave the attacker in a worse position than before he began interdicting. One's opponent quickly recovers the use of what is important to him and takes steps to ensure that any next attempt at applying the tourniquet will be both more difficult and less effective.

Interdiction is a contest between the attackers' ability to implement destruction and disruption over time versus the defenders' abilities to prevent damage and recover constructively. Thus, interdiction is a race between cumulative debilitation and increasingly effective or ineffective recovery. Considering just the first element of interdiction (attacking or control-

ling the sources of production), we find that even an inadvertent relaxation of the tourniquet allowed recovery to begin from the antioil campaign. In his memoirs, Former Reichsminister Albert Speer described the results of a de facto relaxation due to antiraid procedures and the degraded bombing accuracies during the bad winter weather of 1944:

> By now [July-August 1944] we considered it a triumph to reach at least a tenth of our former production. The many attacks had taken such a toll of the piping systems in the chemical [synfuel] plants that direct hits were no longer required to do extensive damage. Merely the shock of bombs exploding in the vicinity caused leaks everywhere. Repairs were almost impossible. [Nonetheless, repairs were made and made surprisingly well.] In August, we reached ten percent, in September five and a half percent, in October ten again—of our former capacity. In November 1944 we ourselves were surprised when we reached twenty-eight percent (one thousand six hundred and thirty-three metric tons daily).[19]

The last tactical lesson of deep air interdiction bears repeating: Never loosen the tourniquet.

Strategic Considerations

At least four important strategic hypotheses about deep interdiction can be formulated from the foregoing examination of the Allied oil interdiction campaign of World War II: The interdictor must use, control, or influence all three elements of interdiction together to close the cycle of destruction upon his enemy; interdiction is neither complete nor permanent; interdiction does not win wars by itself; and interdiction is a war-winning strategy when it is combined with any one of several sorts of dramatic, psychological hammer blows. At Ploesti, the hammer was occupation by the Red Army. In Italy, neither the tourniquet of the Strangle air interdiction campaign nor the hammer of the Diadem ground offensive would have accomplished their goals without the other. Together, the Strangle-Diadem combination broke through the stalemated Gustav Line and marched the Germans out of Rome.[20]

Ploesti 1944

The 1944 oil raids extended from 5 April to 19 August with 23 large-scale attacks and more than 13,000 tons of bombs dropped. Damage to the Concordia Vega refinery (right) was extensive.

The criticalness of dealing with all three elements of interdiction is implicit in recognizing that interdiction is a strategy of cumulative debilitation that is made significant through combat engagement of the enemy. A weakened but unengaged opponent recovers, and he recovers wiser, more resourceful, and usually more intent on seeking revenge. But a weakened and engaged opponent is like the drowning man that the Allied oil interdiction campaign made of the Luftwaffe in 1944.

Those who, in their enthusiasm, still believe that deep interdiction can win wars alone should carefully consider a case that was parallel to that of Ploesti involving a synthetic fuel facility

that was not so quickly occupied by the Red Army.

At Ploesti the Red Army arrived before any significant rebuilding had been accomplished, but there can be little doubt that if they had not arrived Ploesti would have staggered up from the ashes once again to furnish fuel to the Axis as soon as cessation of the bombing allowed such an undertaking. In a similar case, the large synthetic fuel plant at Merseberg-Leuna, Germany, received Allied attentions like those showered upon Ploesti, yet the Leuna plant somehow again and again resumed production until the end of the war.

According to the United States Strategic
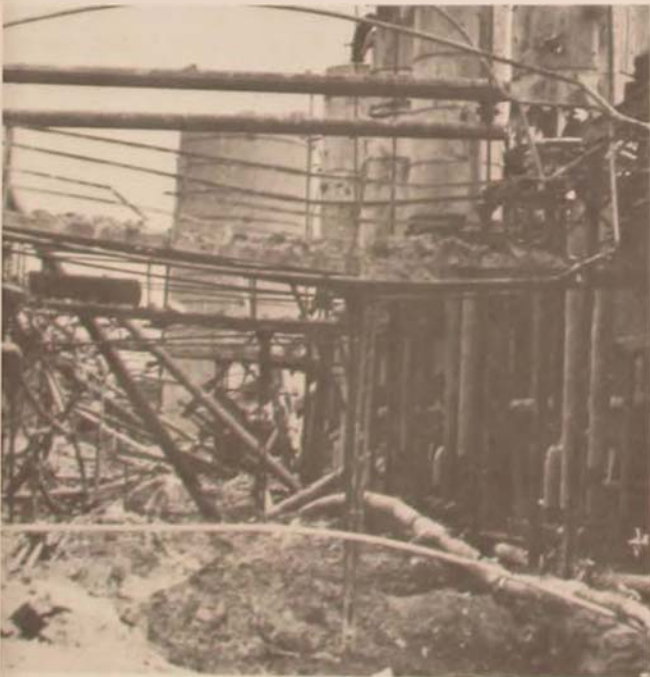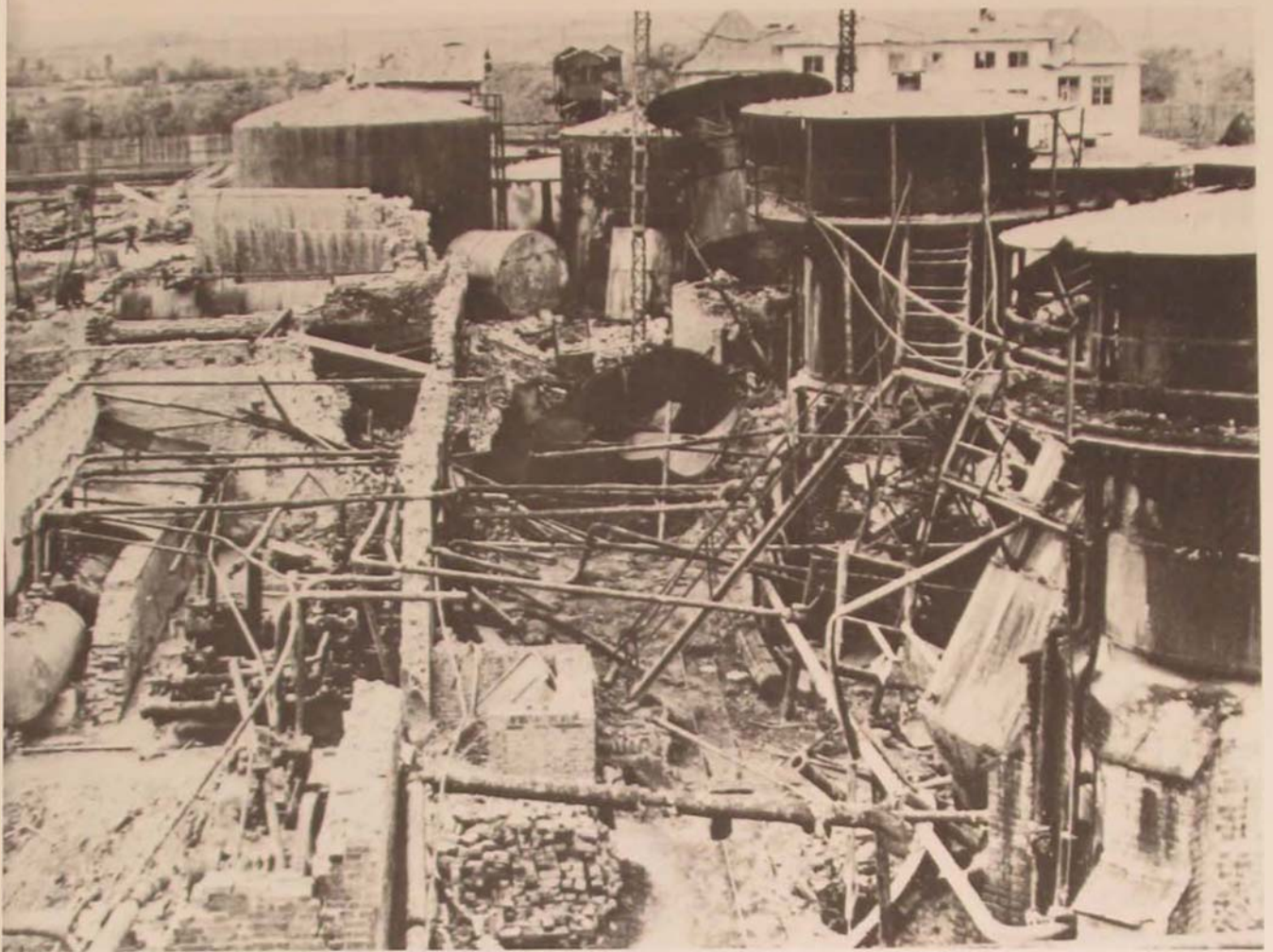
Disruptive raids on the Ploesti installations continued. Concordia Vega pump house and treating plant (above) were devastated by the repeated attacks. Astra Romana (left), the largest and most important of the Ploesti refineries, was so heavily damaged that the Germans made no effort to repair much of it.
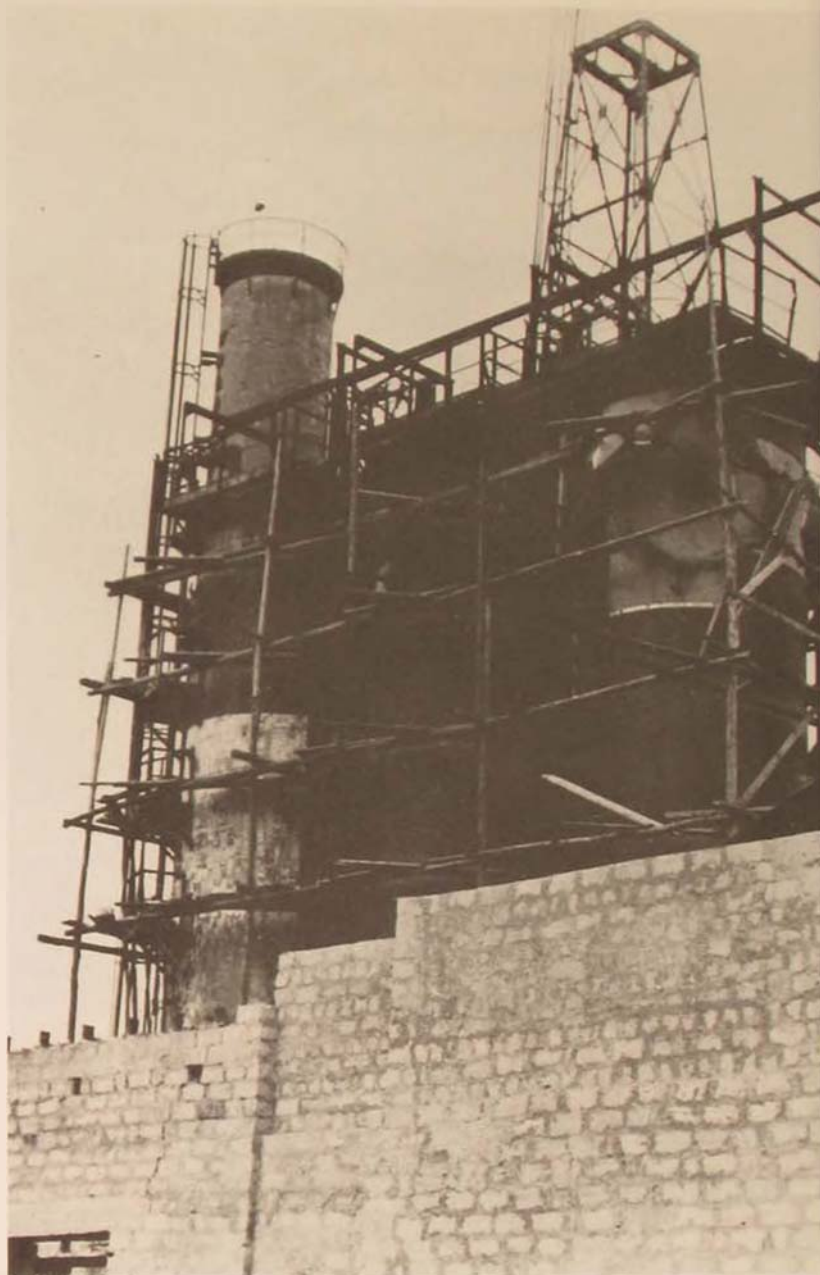
Bombing Survey, Leuna was attacked 20 times by the Eighth Air Force and twice by the RAF in the last half of 1944. A total of 6552 bomber sorties were flown against the plant, and 18,328 tons of bombs were dropped. At first, in the days following a bomb raid, Leuna would resume partial production, and then greater and greater portions of the original capability would be restored until the next raid struck. The data on Leuna seem to point initially toward a learning curve in restoring production (decreasing intervals between bombing and the restoration of partial production), but that was apparently overtaken by a greater cumulative effect of destruction. Like a fighter punishing a cut over his opponent's eye, the Eighth Air Force persisted in bombing Leuna until it was no longer able to recover even partial production from 28 July to 14 October 1944. Bad weather degraded the accuracy of the six heavy

Allied attacks in November, allowing Germany enough of a respite to restore Leuna to 15 percent of its capacity by January 1945. The plant continued at that rate until virtually the end of the war.[21] Unless an opponent is hammered after he has been weakened, by miracle or superhuman effort, he will restore for himself those capacities that he holds to be important.

For those who remain skeptical of the effectiveness of deep interdiction, the fall of Japan provides further food for thought. Despite widespread expectations during World War II that Japan would never capitulate without the cataclysmic agony of an Allied invasion, she did, and she did so after a military sequence of the tourniquet and the hammer. The B-29s fire-bombed the dispersed factories of Japanese production (the first element of successful deep interdiction); U.S. submarines doggedly assaulted her maritime lines of communication (the second element); and the U.S. advances in the central and southwest Pacific enforced Japanese consumption of war materiel (the third element). With all three elements of interdiction engaged, Japan's army and navy suffered the same cycle of destruction discussed in connection with the Luftwaffe and the antioil campaign. The tourniquets were applied to the right places, all the way around the life lines and sinews of the foe; and, though the job was long and tough, they never let up. The tourniquets were not loosened, and Japan was thus prepared for the hammer.

The atomic hammering of Hiroshima and Nagasaki was devastating enough to create its own strategy and literature,[22] but its success as a psychological hammer on the minds of the military leaders of Japan seems less well appreciated. Does anyone now doubt that in 1945 Japan was a thoroughly mobilized nation-in-arms prepared to contest in blood and destruction the invasion of any square mile of its homeland?[23] Yet its obdurate leaders either changed their minds or were replaced after both the cumulative weakening of national power from the U.S. bomber and submarine tourniquets and the psychological hammering of the atomic bomb. Nonetheless, this important and perhaps critical lesson does not appear in our operational doctrine today.

Those who codified USAF doctrine after World War II and Korea appear to have conceived of offensive air attacks as two separate roads. The strategic road led directly to the heart of the enemy's economy and government; strategic air attack could be decisive in and of itself; and its employment was dependent on a separate Air Force with its own doctrine, strategies, force structure, and constituencies. The tactical road led back to the battlefield; tactical air attack supported and made possible successful ground battle decisions; and its employment also depended on centralized control but perhaps with less rationale for an Air Force service separated from the Army.[24]

Strategic air attack rationalized and supported the nuclear superiority of the United States and our national strategy of massive retaliation. In turn, nuclear dominance and massive retaliation held out hope for a "clean" military instrument of power which could threaten compelling destruction upon those who would oppose us without the mire, blood, anguish, and national casualties of previous wars. Tactical air attack was categorized into air superiority, interdiction, and close air support missions all of which were dependent almost exclusively on conventional munitions. As a consequence, surely its missions, forces, and operational doctrine should take second place to the strategic ones on which national survival more depended. But after two limited wars and several conventional power projections, is it now time for another change in perspective? The accompanying schematics suggest that it is.

By casting the immediate military objectives of bombardment into target categories, we can compare and contrast the current battlefield air interdiction (BAI) and interdiction attacks with strategic attack. In this schematic the major differences are in the delivery vehicle (TAC-

provided or SAC-provided) and the range of targetry to be attacked. The two types of missions share many of the same types of targets and for many of the same purposes.

One could divide air power into tactical and strategic compartments merely as a realistic recognition of their essential differences in objectives: tactical air power directly relates to the land battle whereas strategic air power seeks out the economy and government of an enemy. But our ability to apply the lessons learned from one war to the next would be improved by recasting our mission categories. More specifically, the two-roads approach of

target categories	military	logistical	economic	technical	political	social
tactical aviation	CAS	BAI	interdiction			
strategic aviation		BAI	strategic military attack	strategic economic attack	nuclear retaliation	
missiles			fixed targets at known locations			
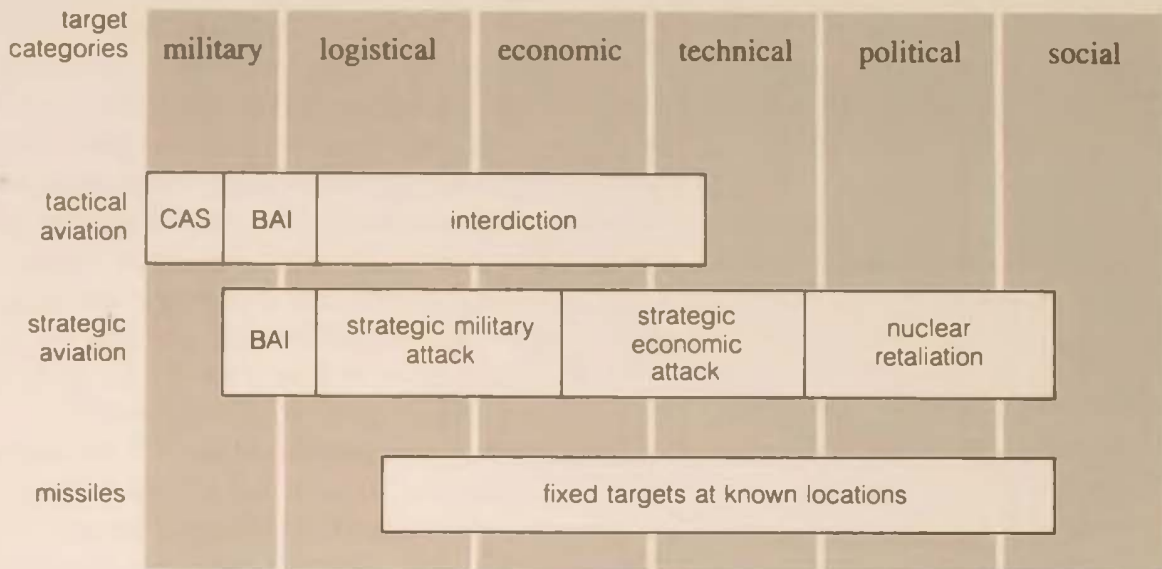
An approximation of what we have today.

Figure 1. An approximation of what we have today

Figure 2. A proposed new look

target categories	military	logistical	economic	technical	political	social
tactical aviation	CAS					
strategic aviation		BAI	deep interdiction		strategic attack	nuclear retaliation
missiles						
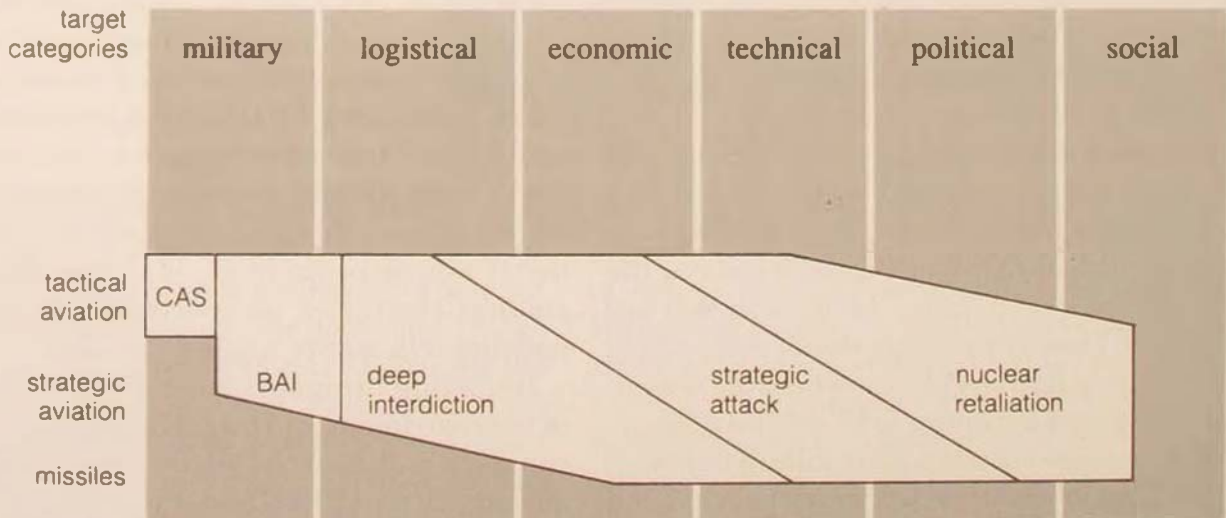
A proposed new look.

tactical versus strategic has outlived its usefulness in the area of operational doctrine. Therefore, as alternative operational doctrine, I propose new categories of deep interdiction and strategic attack.

Deep interdiction would be defined as aerial bombardment by long-range combat aircraft or missiles in offensive air operations against those factors of military, logistical, economic, and technical targets whose destruction or disruption will catastrophically weaken the national military power of an enemy—i.e., the tourniquet. Of course, the second category of strategic attack would be defined as aerial bombardment by long-range aircraft or missiles in offensive air operations against those factors of logistical, economic, technical, political, and social targets whose destruction or disruption will shatter the mind-set of those enemy leaders who can accede to the desired political goals of the war—i.e., the hammer.[25]

In this perspective, the 1943 Ploesti raid failed because it could not be repeated and because it was isolated from the other necessary parts of a successful interdiction campaign. The 1944 siege succeeded because it dealt repeatedly with all three elements of interdiction and was part of a theater-wide oil interdiction campaign. The success of a campaign may be measured by how well it accomplished its primary goal, which was the fatal weakening of the Luftwaffe. Thus, the objective of both the oil and aircraft industry attacks was to disrupt and destroy the central process by which the Luftwaffe joined aircraft, pilots, and consumables into weapon systems; in short, to disarm the enemy. Because the enemy's weapon-system process stretched across technical, economic, and logistical targets, Allied efforts against that process are best understood as deep interdiction.

MY goal here has been to focus attention on deep interdiction and strategic attack and the relationship between them. Understanding this relationship and the relationships of these missions to the other land and air battles of the theater appears to have been the key to successful air power employment in World War II. As for the present, whenever criticisms of deep interdiction or conventional strategic bombing arise or whenever some overly optimistic planner starts talking about strangling the opposition, consider the tourniquet and hammer. You may be surprised to see how well they apply.

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Notes

1. AFM 2-1, *Tactical Air Operations—Counter Air, Close Air Support, and Air Interdiction*, 2 May 1969, p. 7-1. In AFM 1-1, *Functions and Basic Doctrine of the United States Air Force*, 14 February 1979, pp. 2-13, one finds a broader description of the function of air interdiction: to "restrict the combat capability of the enemy by delaying, disrupting, or destroying their lines of communications, their forces, and their resources." The part of the described interdiction mission category that may have a direct or near-term effect on surface operations is often called battlefield air interdiction (BAI). TACM 2-1, *Tactical Air Operations*, 15 April 1978, pp. 4-30–4-36, pictures battlefield interdiction as a doctrinal response to the Soviet propensity for the deep echeloning of armored forces. The thrust of this article is to consider and assess the broader category usually referred to as air interdiction and investigate what principles of air employment appear to be related to its success or failure.

2. To answer why interdiction principles were used fairly successfully in World War II but were largely disappointing in Korea

and Vietnam, some air power enthusiasts would point out the large differences between limited wars and general conventional war. For an excellent example, see Colonel Herman L. Gilster, "Air Interdiction in Protracted War: An Economic Evaluation," *Air University Review*, May-June 1977, pp. 2-5, 10-18. Others would ascribe the failures of modern air interdiction to a variety of other causes: (1) our ineptitude in analyzing its real costs and benefits, see Captain Robert O. Heavner, "Interdiction: A Dying Mission?" *Air University Review*, January-February 1971, pp. 56-59 or perhaps Wing Commander Alan Parkes, RAF, "Air Interdiction in a European Future War—Doctrine or Dodo? *Air University Review*, September-October 1976, pp. 16-18; (2) to capability limitations, inappropriate restraints, and overly gradual force application, for example, General George J. Eade, "Reflections on Air Power in the Vietnam War," *Air University Review*, November-December 1973, pp. 2-9; or (3) to some sort of tragic flaw inherent in deep air interdiction today, see Steven L. Canby, "The Interdiction Mission—An Overview," *Military Review*, July 1979, pp. 22-27; or

Charles E. Myers, Jr., "Deep-Strike Interdiction," United States Naval Institute *Proceedings*, November 1980, pp. 47-52.

The differences between limited and general wars are certainly numerous and important, but I believe another explanation may be that the "real" principles of interdiction were discovered during World War II but were not quickly codified and institutionalized in the postwar Air Force. When that codification was accomplished, many perceptions of those principles had faded and changed. Perhaps it would be fair to say that USAF leaders were preoccupied with solving weightier and more demanding issues such as the role and mission of the newly separated service, the maintenance of some sort of force structure in the frenzy of postwar demobilization, the definition of tactical and strategic aviation and the priority of each, and an interservice decision over the command and control of theater air forces. For whatever reasons, the principles and doctrine of World War II air interdiction were not uniformly agreed to and codified very quickly. The first major USAF-wide document on doctrine (AFM 1-2, *United States Air Force Basic Doctrine*) was approved for publication on 1 April 1953. General operational procedures appeared in AFM 1-7, *Theater Air Forces in Counterair, Interdiction, and Close Air Support*, on 1 March 1954, seven months after the Korean War truce. See AFM 1-1, 14 February 1979 for the evolution of USAF basic doctrine. Additional details may be found in Frank R. Jenkins, *The Development of Interdiction Doctrine and Strategy in the USAF: Post World War II* (Maxwell AFB, Alabama: Air War College Research Report, 1977).

3. Of course, there are those today who believe that interdiction is limited to only the second element, movement to the battlefield. The central thrust of this article is that route denial and battlefield isolation are essentially meaningless military tasks unless related to an overall effort to control production, impede movement, and increase combat consumption. If a measure of control can be brought to all elements, I believe that interdiction can create both a general overall enemy shortage of a specific sort of combat supplies and an acute, specific, and critical shortage of the same supplies in the battle area. And successful interdiction does so at a time when weakened enemy resistance could allow our own armed forces to attain our desired military and political objectives in war. On the other hand, a one-element interdiction campaign may well isolate the battlefield; but, if there is no general shortage, fresh and innovative resupply will quickly follow; and, if there is no increased consumption in combat, the enemy is allowed to save up whatever supplies do arrive until he has accumulated enough for a new offensive of his initiative. The cycle of destruction is not closed until all three elements can be at least partially accounted for. See Townsend Hoopes, *The Limits of Intervention* (New York, 1969/73), pp. 75-76, and General William Momyer, *Air Power in Three Wars* (Washington, 1978), p. 163.

4. I contend that General Carl Spaatz, Commander of the U.S. Strategic Air Forces, exercised an appropriately high appreciation of the three elements of interdiction in his plans for destroying the Luftwaffe through both the counterair and counteroil campaigns. See David MacIsaac, *Strategic Bombing in World War II* (New York, 1976), pp. 17-19, and Wesley F. Craven and James L. Cate, editors, *The Army Air Forces in World War Two*, vol. III (Chicago, 1951), pp. 174-77.

5. It is important for analysts of any air strategy to appreciate the human dimension of all armed conflict. As this article shows, interdiction is a complex contest between national antagonists who, more often than not, are found to be both determined and resourceful. The dynamics between destruction, construction, and battle are clearly more difficult to grasp than any mechanical, mathematical, or fanciful analogues. We are not justified in calling our historical comparisons experiments, but neither are we likely to have any satisfactory replacement for them. Debate and informed dialogue remain our major sources of truth as we try to produce approximate lessons in the use of air power during international conflict.

6. This account of the Ploesti bombardments is largely based on Leon Wolff, *Low Level Mission* (Garden City, New York, 1957), and James Dugan and Carrol Stewart, *Ploesti* (New York, 1962). Additional sources, of course, were used throughout and are cited where appropriate.

7. "Brief History of the Ninth Air Force," *The 9th Sees France and England* (AAF Publication Company, 1947), p. 3.

8. It is difficult to state authoritatively how fast Ploesti recovered from the 1943 attack. The Soviets occupied Romania in August 1944, but the United States Strategic Bombing Survey (USSBS) never got an opportunity for the sort of thorough and detailed review of enemy records that was possible in most of Germany. The USSBS reported that the 1 August 1943 raid had a "temporary effect" and that deliveries of Romanian oil actually increased from August 1943 through April 1944. *USSBS Over-all Report (European War)*, (Washington, 30 September 1943), p. 41.

9. Air War Plans Division (AWPD)-42, the 1942 revision of AWPD-1, did not plan for any repeat attacks on the Romanian oil refineries. See AWPD-42, Appendix G VII and Thomas A. Fabvanic, *Strategic Air Attack in the United States Air Force: A Case Study* (Manhattan, Kansas: Military Affairs/Aerospace Historian Publishing Series, 1976), p. 59.

10. These April 1944 attacks were actually initially directed as part of the counterrail effort; however, I agree with the 15th Air Force historian, the official Air Force history, and the USSBS that because of the damage inflicted then to the refineries we should count the April raids as the beginning of the offensive against enemy oil. See *Fifteenth Air Force History*, vol. I, p. 363; *USSBS Over-all Report (European War)*, p. 41; and Craven and Cate, vol. III, p. 174.

11. Craven and Cate, vol. III, pp. 283-91.

12. United States Strategic Bombing Survey, *Summary Report (European War)*, (Mimeographed Report, 30 September 1943), p. 12x; and Craven and Cate, III, p. 291.

13. In one sense it is correct to state that the antioil bombing campaign was a complete air interdiction campaign that succeeded without direct requirement for ground action, but a wider perspective would reveal that the ground conquest of Italy was necessary to provide nearby air bases, that the Red Army offensive caused much of the German motor and aviation gasoline consumption, and that the Red Army was the instrument of Ploesti's demise in World War II. Nonetheless, I believe that having all three interdiction elements employed primarily by air power alone merits attention, especially since their use resulted in the debilitation of the Luftwaffe.

14. USSBS, *Over-all Report (European War)*, p. 22. Of course, a good case can be made that it was the unexpectedly heavy wartime attrition of German pilots that caused the progressive collapse of the pilot training program as its leaders sought to fill the empty planes. On the other hand, why did pilot attrition continue to be unexpectedly heavy? I agree with Craven and Cate that the oil attacks of 1944 made a reality of an allied antioil threat which, in the words of Albert Speer, "had been a nightmare to us for more than two years." See Craven and Cate, vol. III, p. 287. In my view, it seems likely that prioritizing and allocating for an expected shortage of oil played a large role in the German decisions on wartime pilot training, and clearly the oil attacks played the primary role in initiating combat attrition of the German weapon systems.

15. The USSBS conclusion that the counteroil campaign was the primary source of the Luftwaffe's defeat through its lack of well-trained pilots is still persuasive today, for we can see more clearly than the Allies could in World War II how wildly improbable it would be to assert that the counterair campaign against the German fighter industry was the cause. During the last half of 1943, Allied intelligence estimated average monthly single-engine fighter production at 645 whereas the actual German monthly figure was 851. The fighter production facilities were the major target for the counterair bombing offensive, but fighter production increased

under attack. After intensified bombing (including the massive efforts of "Big Week" in February 1944), Allied intelligence estimated monthly single-engine fighter production at 655 during the first half of 1944. After the war, the actual monthly production average for that period was found to have been 1581. More fighters were available than there were pilots to man them. See Craven and Cate, vol. III, pp. 45, 174-77.

16. Sun Tzu, *The Art of War*, translated by Samuel B. Griffith (New York, 1963), p. 84.

17. Ibid.

18. Albert Speer goes so far as to say that Craven and Cate missed the decisive point of the Combined Bomber Offensive. He said, ". . . the real importance of the air war consisted in the fact that it opened a second front long before the invasion of Europe. That front was the skies over Germany." *Spandau: The Secret Diaries* (New York, 1976). The trick to getting the interdictive tourniquet all around the limb is one of scale.

19. Albert Speer, *Inside the Third Reich* (New York, 1970), p. 348.

20. F. M. Sallagor, *Operation "STRANGLE" (Italy: Spring 1944)*, R-851-PR (Santa Monica, California, 1972), pp. v-xiv; and Craven and Cate, vol. III, pp. 373-96.

21. USSBS, *Summary Report (European War)*, p. 12.

22. See for example, Bernard Brodie, *Strategy in the Missile Age* (Princeton, New Jersey, 1959); Klaus Knorr, *On the Uses of Military Power in the Nuclear Age* (Princeton, New Jersey, 1966).

23. The words of the Japanese Archbishop of Tokyo are most explicit about the determination of the people of Japan to resist invasion: "The nation would never give in. To realize that there was no hope of winning the war and the will to surrender were matters of an entirely different kind. The people had made up their minds to offer life and everything for the country." Letter, 9 May 1946, reprinted in U.S. Army Air Forces, *Mission Accomplished: Interrogations of Japanese Industrial, Military, and Civil Leaders of World War II* (Washington, 1946), p. 97. See also John Toland, *The Rising Sun: The Decline and Fall of the Japanese Empire 1936-1945* (New York, 1970), for a review of the fortunes of the peace and war factions in the Japanese government in 1945.

24. Contrast the tactical AFM 1-7, *Theater Air Forces in Counterair, Interdiction, and Close Air Support*; AFM 2-1, *Tactical Air Operations—Counterair, Close Air Support, and Air Interdiction*; and TAC Manual 2-1, *Tactical Air Operations*, with the nuclear-oriented AFM 2-11, *Strategic Aerospace Operations*.

25. The tourniquet and the hammer analogies were suggested by the cumulative and sequential strategies of Joseph C. Wylie, *Military Strategy: A General Theory of Power Control* (New Brunswick, New Jersey, 1967), pp. 23-29.

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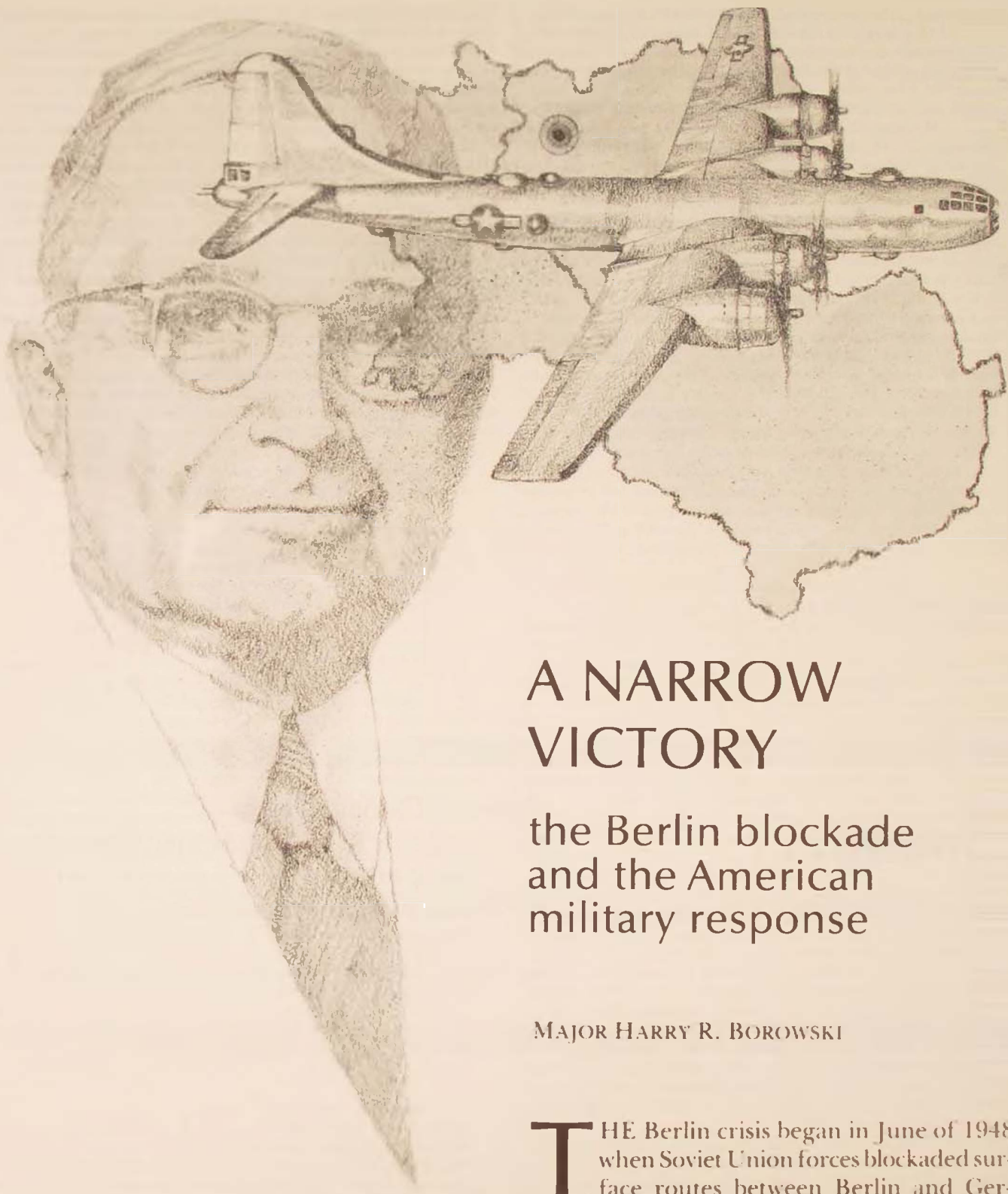
A NARROW VICTORY

the Berlin blockade and the American military response

MAJOR HARRY R. BOROWSKI

THE Berlin crisis began in June of 1948 when Soviet Union forces blockaded surface routes between Berlin and Germany's western zones, thus denying Allied powers free access to the divided city. Despite its monopoly of atomic weapons, the United States had few options. Berlin lay deep inside Soviet-

controlled Germany, and the United States maintained approximately two divisions in Europe. In ground strength, Joseph Stalin held the trump cards. Thus, although President Harry Truman refused to use military force to open the surface routes, he resisted Soviet pressure to withdraw Americans from the city and sent 90 B-29 bombers to England. Meanwhile, the Air Force began airlifting food to the western sectors of Berlin. To the surprise of Soviets and Americans alike, Operation Vittles was soon supplying all the necessities for West Berlin. After nearly a year, the Soviets lifted their blockade, leaving the Western position intact. The U.S. response seemed firm, bold, imaginative, correct, and obviously successful.

Yet the victory in fact was a narrow one for three reasons. At the time of the crisis, American military capability was severely limited. Second, military planning was incomplete and inadequately coordinated. Third, the United States had not clearly defined its foreign policy objectives, as reflected by Truman's cautious response to the crisis.

Much Cold War scholarship has emphasized American intentions in the context of foreign policy. Most historians, despite their varied interpretations, have focused on diplomatic, economic, or political considerations. Few have paid sufficient attention to American military plans for supporting foreign policy objectives or the military capability needed to execute plans. Many scholars have assumed that the monopoly of atomic weapons alone demonstrated military preponderance. For a more comprehensive and balanced understanding of the Cold War and the Berlin crisis, in particular, all three factors must be considered together. Until recently, classification restricted scholars from documents needed to examine military planning and capability fully. Now, it is possible to show the critical relationships among military capability, planning, and foreign policy objectives during the Berlin blockade.

In June 1948 American military strength, especially that of the air arm, was unable to meet the threat of Soviet aggression in Western Europe, the Middle East, or in East Asia. The problem stemmed from a shortage of men and materiel and from unrealistic training. The dilemma had begun in the days just following World War II when the American military establishment demobilized. Public will and congressional pressures resulted in a crippling plan that permitted the most experienced servicemen to separate first. The Army Air Forces (AAF), heavily dependent on skilled, experienced technicians, suffered severely. The number of airmen belied actual combat capability; grave shortages existed in all critical skills. By the end of 1946, General Carl Spaatz, Commanding General of the AAF, could claim only two combat effective groups in his entire organization. Thus rebuilding became a key objective in 1947. Some units made important progress, but aging airplanes, rising procurement costs, and small budgets clouded the future.[1]

Differences over military strength soon arose between President Truman and the Congress. Both had agreed to initial demobilization plans, but in late 1947 many congressional leaders grew concerned about U.S. military weakness. Truman's own Air Policy Commission (the Finletter Commission) investigated and concluded that America's military air power was hopelessly inadequate, and it called for a dramatic increase in procurement funds to build a seventy-group air force.[2] Several months later, the Congressional Aviation Policy Board (the Brewster Board) reached the same conclusion. Both reports expressed grave concern at U.S. military weakness and supported the Air Force goal of seventy groups. That solution, however, carried costs which neither the President nor Congress wished to impose on the taxpayer. Truman preferred to hold aviation expenditures constant; congressmen looked for budget items that might be reduced to permit more spending for the newly independent Air Force.[3]

Shortages affected the nation's air arm in

several ways. The Strategic Air Command (SAC) could maintain about 160 operational B-29 bombers; only 27 were modified to carry the larger atomic bomb.[1] Shortages of planes and skilled manpower impelled the SAC commander, General George C. Kenney, to experiment with a cross-training program designed to use fewer men in each group.[5] Although SAC worked toward greater efficiency, the command failed to develop a realistic training program. Aircrew skills deteriorated. By the summer of 1948, Air Force leaders seriously questioned the ability of SAC to deploy its aircraft and men quickly and to bomb accurately.[6] In July the most elite B-29 group, the 509th, averaged a circular error of more than one statute mile when bombing by radar from high altitudes.[7] In 1948, therefore, SAC's ability to deliver atomic and conventional weapons was in serious doubt.

The problems SAC and the Air Force faced were compounded by incomplete planning at the Joint Chiefs of Staff (JCS) level, where progress had been slow and quarrelsome. Not until May 1948 did the Chiefs agree on an integrated war plan. The Brewster and Finletter reports addressed the JCS failure to develop unified plans and joint procurement practices for all services, noting that future requirements were merely consolidated, not integrated. Thomas K. Finletter later described a telling committee experience. After repeated committee requests to examine the JCS war plan, Admirals William Leahy and Chester Nimitz and Generals Dwight Eisenhower and Hoyt Vandenberg delivered a plan, "pages thick, pages and pages," accompanied by an oral presentation. The committee found the briefing very confusing. After several questions, Eisenhower apologized, "I'm sorry, I guess my mind is worse than I thought it was; I can't understand what the war plan is." After more fruitless discussion, he continued,

Gentlemen, these five civilian gentlemen who are here are just patriotic American citizens trying to do something they've been asked to do by the President. I think we owe it to them to tell them that there is no war plan.[8]

The JCS had failed to develop adequate war plans for several reasons. Demobilization and military reorganization demanded immediate attention and required the time and energies of the military chiefs. But more important, the U.S. government had not clearly outlined post-World War II objectives, so military men formulated plans without sorely needed direction.[9]

Lacking specific guidance, the JCS had begun planning independently in the fall of 1945. The Joint Intelligence Committee estimated what it considered to be the Soviet Union's immediate foreign policy objective: the establishment and consolidation of Soviet hegemony in areas peripheral to the U.S.S.R. Though American planners doubted the Red Army could wage a major war before 1950 (war damage to Soviet industry was estimated to be 25 percent of the prewar capital stock), they believed the Red Army could overrun one of three areas: continental Europe; Turkey, Iran, and Afghanistan; or Korea-Manchuria-North China. If the Soviets initiated war, the best U.S. hopes rested on the use of atomic weapons. The Joint War Plans Committee recognized that "the only weapon which the United States can employ to obtain decisive effects in the heart of the USSR is the atomic bomb delivered by long-range aircraft." The committee estimated that 196 atomic bombs would cause ". . . such destruction upon the industrial sources of military power in the USSR that a decision could eventually be obtained."[10] The JCS, however, had no detailed plan for executing an atomic attack.

To correct this deficiency, the JCS developed a series of special studies under the name Pincher, to provide the basic data for a joint outline war plan. After successful preliminary work, the JCS directed its Joint War Plans Committee to prepare a joint outline war plan in Au-

gust 1947, based on the assumption that "... within three years, war would be forced upon the United States by acts of aggression by the USSR and its satellites."[11] The committee, however, labored under a cloud of uncertainty. It still lacked a definitive statement of the long-range objectives of the United States or reasonable estimates of the nation's industrial and manpower mobilization capabilities. Moreover, America's immediate war aims were not clear. What was the goal? To destroy the Russian peoples, Soviet industry, or the Communist Party and its hierarchy? Equally important, what would be the objectives following victory? The State Department and, after 1947, the National Security Council (NSC) held the responsibility for giving direction in these matters. Neither provided the needed guidance.[12]

Nonetheless, the JCS had formulated a so-called "Over-all Strategic Concept" that gave some general direction to planning. In the event of war, the concept held, the will of the U.S.S.R. had to be destroyed by a main offensive effort in Western Europe and a strategic defense in the Far East. Initially, the United States would launch a powerful offensive against the vital elements of the Soviet war-making capacity. By exploiting the destructive and psychological power of atomic weapons, the United States could protect the Western Hemisphere, the United Kingdom, and the Bering Sea-Japan Sea-Yellow Sea line. Other efforts, employing political, psychological, and underground warfare could reduce the Soviet war potential, but atomic weapons held the key.[13]

In late 1947, the Joint Strategic Plans Committee of the JCS incorporated this concept into plan Broiler, which relied principally on atomic attack. The plan presumed that an adequate stockpile of atomic bombs would be available at the outset and more would be produced during hostilities. Given Soviet numerical superiority in manpower and mobilized tactical air power, the best hope for American victory lay in long-range bombing of vital centers of Soviet war-making capacity. The principal strategic targets would be governmental centers, urban industrial areas, and selected petroleum targets within the U.S.S.R.

Clearly the success of the overall strategic concept depended on the effectiveness of the early air offensive, particularly that of aircraft delivering atomic bombs. Forward base areas from which to launch the campaign, specifically the United Kingdom, Japan-Ryukyus, and the Cairo-Suez area, would be critical. The bases had to be secure enough to permit deployment and operations, suitable for use without extensive construction, and logistically supportable. Lastly, they had to lie within range of vital Soviet targets. Early drafts of Broiler considered the Cairo-Suez region a promising forward base area. It lay within reach of most Soviet targets. But planners soon realized that Egyptian bases could not be developed quickly enough to support strategic bombing operations and could be overrun. In the final analysis, English bases offered the best prospects for launching a massive air offensive though other areas would be used as available.[14]

The strategic concept and the Broiler plan rested on the critical assumption that atomic weapons would be used in a war with the U.S.S.R. Yet Truman had never given defense leaders firm guidelines on future use of atomic weapons. Although he expressed no regrets over his 1945 decision to bomb Japan, the President did not want to use the atom bomb again.[15] Consequently, he remained vague in his attitude toward its use. Necessary decisions, he believed, could be made when and if the need arose.

The Atomic Energy Commission (AEC) posed yet another problem. Composed of five civilian members, the AEC totally controlled the production of atomic weapons; military units designated to deliver atomic bombs were severely restricted in their access to these weapons. Defense officials and military leaders quite naturally objected to this arrangement. SAC insisted that quick and effective use of atomic weapons depended on familiarity and immediate avail-

A U.S. Air Force Douglas C-54, backbone of Operation Vittles that carried life-sustaining supplies to 2,000,000 West Berliners, prepares for landing at Tempelhof Air Base during the 1948-49 airlift.

ability.[16] The generals fully supported the principle of presidential approval for the use of atomic bombs, but they found little reason for a civilian agency to exercise control over the stockpile. Charged with the responsibility for being prepared to launch a prompt retaliatory atomic attack, the Air Force required a strong, highly trained fighting team. General Spaatz argued that,

> . . . this fighting team should have available to it for prompt use, when required, such atomic weapons as are available and which are appropriate to its use. It is not clearly evident how this state of immediate readiness can be achieved if

atomic weapons remain under the control of the Atomic Energy Commission.[17]

The situation was confusing. Planners anticipated the use of atomic bombs in war plans, but they had no assurances from civilian leaders that use of the atomic bomb would be authorized. Military units had neither access to atomic bombs nor a direct voice in their production and disposition.

In addition to these problems, nonmilitary developments in 1947 and early 1948 brought new concerns to defense planners. Substantial economic aid to Western European economies

through the proposed Marshall Plan promised to undercut support for Communist parties in those countries. Success, however, might prompt the U.S.S.R. to resort to military action. In 1947, Averell Harriman expressed a commonly held view when he said time was running out for peace in Europe. Communist demonstrations in France and Italy, he warned, indicated more than a tactical maneuver.[18] Later that year, a JCS report voiced similar warnings concerning the increased danger of war as the result of American economic aid. Immediate and firm Soviet action seemed likely since a delay in response would work against the Soviets.[19] During the autumn, the European scene featured strikes and antigovernment demonstrations, while Stalin established the Cominform. The fall of the Czechoslovakian government in February 1948 dramatically confirmed American fears of aggressive Soviet actions and intentions.

In Germany, prior to February 1948, General Lucius Clay had scoffed at the possibility of war with the U.S.S.R. Then he began to notice a serious change in the attitude of every Soviet, "faintly contemptuous, slightly arrogant, and certainly assured."[20] In March, he cabled General Omar Bradley, Army Chief of Staff, revealing a growing apprehension:

> For many months, based on logical analysis, I have felt and held that war was unlikely for at least ten years. Within the last few weeks, I have felt a subtle change in Soviet attitudes which I cannot define but which gives me a feeling that it may come with dramatic suddenness.[21]

On 31 March, preliminary sparring began. The Soviets told the Allied powers that, effective 1 April, military passenger trains en route to Berlin from the West would be stopped and their baggage and passengers checked by Soviet troops. With Washington's support, Clay continued to move the American trains eastward. The Russians responded by shuttling them onto side tracks. Within days the trains retreated, and the Soviets lifted the restrictions. Some traffic resumed by the end of April, but

the issue of U.S. occupation in Berlin remained volatile.[22]

Tensions in Germany generated several important actions. Congress approved a $22 million increase in the Air Force budget to permit expansion to 70 air groups, and the JCS planners finally submitted an acceptable integrated war plan to the service chiefs. Truman had unsuccessfully pushed for a $4 billion Universal Military Training Act. Cost would not permit both. Moreover, the President's scheme was politically distasteful, and it was not clear how an expanded army could bolster the U.S. military position in Western Europe.[23] Congressmen voted instead for an expanded air arm. Shortly thereafter, on 19 May, the Joint Chiefs of Staff adopted a short-range emergency war plan called Halfmoon, nearly three years after World War II.[24]

The authors of Halfmoon continued to operate under the assumption that atomic weapons would be used but admitted that no political guidance had been received. The plan contained the same national war objectives adopted by Broiler six months earlier.[25] Halfmoon also acknowledged certain shortcomings; specifically, the authors recognized that the plan did not provide adequate assistance to the countries of Western Europe. In fact, Halfmoon called for Allied forces in Germany to withdraw to the Rhine and offered little support for retaining Middle East bases and oil resources. Planners believed the Mediterranean could be closed to the Allies after a week of hostilities. Therefore, the United Kingdom had to be protected, for its air bases held the key to Allied operations. Like Broiler, the plan called for an early attack against vital elements of the Soviet warmaking capacity. Strategic Air Command would deploy available units to bases in England and to the Khartoum-Cairo areas and conduct operations from these bases and Okinawa. Atomic weapons and operating bases in Great Britain were the critical elements of the plan.

Halfmoon left important questions unanswered and ignored certain realities. Three

weeks after the acceptance of the plan, the Joint Logistics Plans Committee concluded that if war came within the next several months, parts of the planned operation would fail because of logistical deficiencies. The committee doubted if adequate personnel with proper qualifications could be provided to the right units to make a balanced force. Moreover, a serious shortage of aircraft existed, and all three services were short of certain other supply items. The committee suspected that further deficiencies would be uncovered as more detailed planning evolved. Energetic action was needed to correct these deficiencies.[26]

There was another key shortage: the number of atomic bombs available for delivery. To conduct an air offensive powerful enough to destroy the Soviet war machine, the Russian will to resist, and to protect the United States from attack, General George C. Kenney believed he would need to deliver 200 atomic bombs simultaneously, a figure suggested earlier by the JCS.[27] Although the 70-group air force, when reached, would provide the necessary airplanes, the United States did not have 200 atomic bombs and, even worse, did not have sufficient teams to assemble existing weapons. Although efforts were undertaken in 1948 to increase the number of teams, General Vandenberg advised Kenney that it would be 1951 before enough teams would be available (under the projected training program) to dispatch simultaneously 100 bombs of the current design. With the teams available in mid-1948, only *two* bombs could be assembled per day—hardly the capability needed to destroy the Soviet war machine and its will to fight.[28] Simply put, the Air Force could not deliver the atomic attack so central to Halfmoon.

Despite increased attention to plans after early 1948 and the acceptance of Halfmoon, the United States still had very few options on 24 June when the Soviets established the Berlin blockade. On the 27th, defense leaders convened in Washington to discuss possible actions. They considered three alternatives: withdrawal, stiff reaction followed by a military response, or the compromise action of remaining in Berlin while striving for diplomatic recognition of U.S. rights in that city. On the following day, they made their recommendations to the President, who had already selected the third alternative.[29] Truman elected

Airborne or on flightline, work continued round-the-clock at Tempelhof during the Berlin airlift.

to stand pat, without any definite reaction plans except for evacuation.

From this high-level meeting came another decision that has misled journalists and historians alike: the deployment of 90 B-29s to Europe in July. Most observers assumed that the deployment demonstrated U.S. willingness to use atomic weapons. In mid-1948, however, only two SAC groups had bombers configured to carry atomic weapons. Only the 509th and the 43rd bomb groups of SAC's Eighth Air Force had programs in cooperation with the AEC and organized to handle atomic weapons. Neither of these units was deployed overseas.

Before the Berlin crisis erupted in June, Fifteenth Air Force had deployed one conventional unit from the 301st to Europe on a normal rotation tour. In July, the President sent the remaining two squadrons from the 301st along with conventional units from Fifteenth Air Force. Contrary to popular belief, Truman did not send to Europe any atomic weapons or the capability to deliver them in July 1948.[30]

Soviet leaders may have realized what American observers did not and could have considered Truman's response a cautious move. It is not clear what information the U.S.S.R. pos-

sessed regarding the three deployed groups; Russian knowledge depended on the level of Soviet intelligence within the United States between 1945-48. Enemy order of battle, a primary concern of any military intelligence organization, would have directed Soviet attention to the 509th Composite Group. The 509th had bombed Hiroshima and Nagasaki and was now operating from Roswell Field, New Mexico; that much information was commonly available. And, because of an unpleasant U.S. experience in 1944, the Soviets could also surmise that no B-29 modified to carry atomic weapons would overfly territory not controlled by the United States. During the war, two B-29 Superfortresses had landed in Siberia, and the Soviets had refused to return the aircraft to the Americans. Indeed, AAF officials were extremely bitter when the U.S.S.R. subsequently used these bombers as models for its own developing strategic air arm. Therefore, the United States would certainly not risk losing a specially modified B-29 (Silver Plate) and more valuable information; the Soviets could have confirmed this conclusion by observing the 509th. That unit never left the North American continent except for atomic tests in the Pacific, always flying from U.S.-controlled bases and territory.[31] If the Soviets were observing the 509th and 43rd groups during the summer of 1948, they found the former training in Labrador while the latter was testing and converting to the new B-50 in the States. On the other hand, the 301st, the 28th, and the 307th had all rotated units to Europe or Japan during 1947 or 1948, suggesting only conventional capabilities.

Scholars have usually assumed that the B-29 groups dispatched to England possessed an atomic capability and believed Truman showed firm determination by deciding to use these weapons if the need arose. Certainly the public, reporters, and government observers associated the B-29 with atomic capability. But the deployment in fact revealed Truman's great reluctance to take that critical step. Moreover,
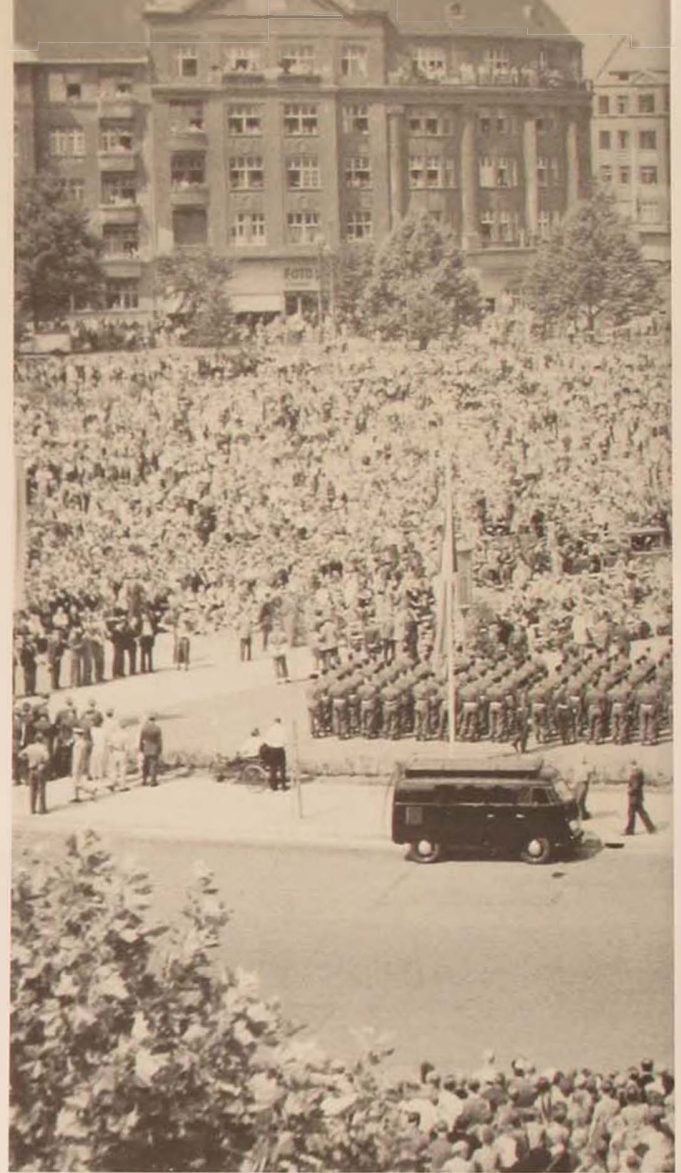
In gratitude the West Berliners erected a monument to commemorate heroic service during the Berlin airlift.

it demonstrated that his intentions were unclear, since conventional bombing would have little impact upon the U.S.S.R. If President Truman had wanted to rattle his saber, he would have sent at least one squadron from the 509th. In that event, no one would have had any doubts about potential actions. By deploying groups with conventional capability only, Truman implied that he hoped for a diplomatic settlement. He also gave the Soviets time; ironically, time was the very factor that would make the

airlift and expressed relief when spared from this duty.[33] General Kenney chafed at the limited leverage offered by the conventional B-29s, complaining,

> The Russians may of course be worried about our 90 B-29s now in Europe, but we don't seem to be using them as a club. Perhaps in time, the Russians will figure that as long as we don't mention them around the green table, that they are no good anyhow.[34]

In Europe, General LeMay realized that ". . . as far as combat capability was concerned the B-29s weren't too much good."[35]

The deployment confused even Secretary of Defense James Forrestal. He believed it impossible to carry out his responsibilities without resolving certain questions. He wanted objectives set down and plans drawn up for the use of conventional or atomic weapons. Forrestal initiated action on 10 July by writing to the President:

> I am convinced that the formulation of a sound military program and intelligent decisions concerning the size and character of our future Armed Forces depend upon a prior determination of our basic national objectives, and of the roles which military strength and other non-military activities should play in furthering these objectives.[36]

At the height of the Berlin crisis, Forrestal was requesting the National Security Council,

> . . . to prepare a statement which specifies and evaluates the risks of the future, states our objectives, and outlines the measures to be followed in achieving them.[37]

The secretary believed that,

> . . . such a statement is indispensable to the National Military Establishment in determining the level and character of forces which it should maintain.[38]

In a memo to the NSC, Forrestal added,

> . . . I believe it is imperative that a comprehensive statement of national policy be prepared particularly as it relates to Soviet Russia. . . .[39]

This correspondence revealed serious flaws in the administration's conduct of foreign af-

blockade work and force the Allied powers from Berlin.

Strategic Air Command generals puzzled over the B-29 deployment and considered the action to be a strictly political move, not a show of force.[32] Militarily, the deployment left too many unanswered questions. What operational plans would follow? Would atomic weapons eventually enter the picture? The commander of the first squadron arriving in Germany did not even know what bomb-loading configuration to expect; thus, he could not pre-position any weapons. In fact, he suspected that the B-29s would be used for hauling coal in the

fairs. Containment and the Marshall Plan represented the foundation for America's foreign policy in Europe, yet the NSC had not outlined specific actions, policies, or plans in support of Truman's program. Consequently, the military, with its limited capability, had no detailed responsibilities. Moreover, the generals did not understand clearly the President's attitude toward use of the atomic bomb, and the dispatch of conventional B-29s to Europe compounded their confusion.

In seeking more direction, Forrestal and the Air Force reopened the matter of control of the atomic weapons stockpile.[10] The President agreed to reconsider the issue. On 21 July, representatives of the AEC, defense officials, and the military leaders met to discuss the matter. Two days later, Truman advised Forrestal that the AEC would continue to control atomic weapons.[11] A major change in the summer of 1948 could have a negative impact on the forthcoming presidential election; he would reconsider the idea after November.[12] Thus the Air Force and Forrestal continued to operate without guidance on the conditions under which atomic weapons might be used. The clearest indication came on 13 September during a meeting between the President and Forrestal. The Defense Secretary noted that Truman,

> . . . prayed that he would never have to make such a decision, but that if it became necessary, no one need have a misgiving but that he would do so. . . .[43]

Nonetheless, military men at all levels remained unclear about the U.S. role in Western Europe. The JCS continued to revise Halfmoon while the Air Force adopted an emergency plan called Harrow for its forces in Europe. Harrow confused Lieutenant General John K. Cannon, however, when he assumed command of the United States Air Force in Europe in late 1948, and he immediately asked for specific guidance. In a long letter to General Hoyt Vandenberg, he outlined his concern over current operational responsibilities:

> Is the basic role of the Air Force in Europe one of occupation or is it one of occupation plus preparation for combat operations on the continent?
>
> The organization as now constituted and as currently disposed, is of very dubious value as a fighting force and cannot be considered adequate even in terms of the broad mission laid down in . . . USAF Plan Harrow. . . .[44]

Cannon wanted to ". . . set up a command capable of combat action in the event of trouble."[45] He took preliminary steps on his own, realizing that his actions conflicted with the evacuation-of-the-continent concept contained in Harrow. But he believed his efforts followed the lines previously drawn for him by Air Force officials in Washington. Although Harrow had stressed evacuation, the developing Western Union Defense Plan could change the thrust of U.S. intent, and Cannon wanted clarification.[46] Not until late November did the NSC finally establish peacetime and wartime objectives in Europe, incorporating them into NSC 20/3 and 20/4.[47]

THE Berlin crisis ended in the spring of 1949 after the Soviets realized that the Allied airlift could support West Berlin despite the blockade. Operation Vittles proved to be the big surprise for both sides and the key to success. In retrospect, the margin of victory was close. The United States did not have the capability to halt a Russian military drive into West Berlin or Western Europe; only atomic attack offered any hope of stopping a U.S.S.R. war effort. Military planning for the use of these weapons, however, was incomplete and suffered from poor direction and guidance from its civilian masters; foreign policy objectives were general and beyond the support of existing military capability. Even though defense leaders anticipated a possible confrontation in early 1948, the United States entered the crisis unprepared. Its war plans held little promise for breaking a blockade of Berlin. President Truman, an accomplished poker player, held and played a weak hand. He

dispatched 90 conventionally equipped B-29s to England; fortunately his hand was not called. Airlift, not the threat of atomic destruction, brought the United States its narrow victory.

United States Air Force Academy

Notes

1. Carl Spaatz, *Report of the Chief of Staff USAF to the Secretary of the Air Force* (Washington, June 1948), p. 13.

2. President's Air Policy Commission, *Survival in an Air Age* (Washington, 1948), pp. 24-25.

3. Congressional Aviation Policy Board, *National Aviation Policy* (Washington, 1948), pp. 7-8.

4. Letter, General Clements McMullen to General Ennis C. Whitehead, 31 May 1947, Strategic Air Command, "History of Strategic Air Command 1947" (Offutt AFB, Nebraska: Hq Strategic Air Command, 1949). Hereafter cited as "SAC History, 1947."

5. Letter, General Clements McMullen to General Roger Ramey, 14 March 1947; letter, Carroll L. Zimmerman, Chief Operations Analysis to AC/S, A-3 SAC, subject: Proposed Cross Training Program, 22 August 1947; "SAC History 1947." See also Memorandum for General Kenney from Major General F. H. Smith, 11 August 1948. Record Group 341, DCS/OPNS Administrative Officer, 452.1, "Programming General."

6. Memorandum for General Lauris Norstad from Major General F. H. Smith, 9 August 1948; Record Group 341, DCS/OPNS Administrative Officer, 452.1, "Programming General."

7. "Bombing DATA by Groups of the Strategic Air Command for Month of July 1948," Fairchild Collection, Library of Congress.

8. Oral history interview with Thomas K. Finletter by Colonel Marvin Stanley, February 1967, pp. 35-37, Interview #760, Albert F. Simpson Historical Research Center, Maxwell AFB, Alabama.

9. Record Group 341, "COS Operation Ex. Office T. #28." Memorandum for the Secretary from General Hoyt Vandenberg, subject: Status of Current Joint War and Mobilization Planning, 6 November 1947. Hereafter cited as Record Group 341, COS Operations.

10. Record Group 319, "Records of the Army Staff," ABC Russia, 22 August 1943, Section 1-A, J.I.C. 250/6, "Soviet Capabilities," 29 November 1945.

11. Record Group 341, COS Operations.

12. Ibid.

13. Record Group 218, "Records of the United States Joint Chiefs of Staff," CCS 381 USSR (3-2-46), Section 10, JSPG 496/4, "BROILER," 11 February 1948.

14. Ibid.

15. Richard F. Haynes, *The Awesome Power* (Baton Rouge: Louisiana State University Press, 1973), p. 60. Haynes and others believe that Truman did have some private doubts.

16. Letter, General Kenney (SAC A3-77 A5C) to Hq USAF, subject: Requirements for Initiation of Atomic Warfare, 4 June 1948.

17. Memorandum, General Spaatz to General Lewis Brereton, Chairman, Military Liaison Committee to the Atomic Energy Commission, subject: Delivery of Atomic Weapons to the Armed Forces, 31 October 1947, Spaatz Collection, Library of Congress. At the time, the Armed Forces Special Weapons Project was responsible for the storage of such atomic weapons as the President might direct the Atomic Energy Commission to transfer to the military.

18. Memorandum, Bruce Hopper to General Spaatz, 22 November 1947, Spaatz Collection.

19. Record Group 218, "Records of the United States Joint Chiefs of Staff," CCS 092 (10-9-46), Enclosure JSPC 814/3, 1947.

20. Memorandum for the record, "Interview with General Clay, July 25, 29, 30, 1946," by Secretary Symington, Spaatz Collection; Lucius D. Clay, *Decision in Germany* (New York, 1950), p. 354.

21. Jean Edward Smith, editor, *The Papers of General Lucius Clay*, vol. II (Bloomington: Indiana University Press, 1974), pp. 568-69.

22. Ibid., pp. 597-613.

23. U.S. Congress, House, Committee on Armed Services, *Selective Service, Hearings*, before the Committee on Armed Services, House of Representatives, 80th Congress 2d session, 1948, pp. 6079-6161, specifically 6098 & 6161; Walter Millis, editor, *The Forrestal Diaries* (New York, 1951), p. 415.

24. Record Group 218, "Records of the United States Joint Chiefs of Staff," CCS 381 U.S.S.R (3-2-46) Section 12, "Decision on J.C.S. 1844/4," 19 May 1948.

25. Halfmoon did not contain the "Overall-Strategic Concept," but it was inserted in a late July revision (1844/13). It was probably omitted to facilitate acceptance by the three service chiefs, which might suggest that one or two chiefs were troubled by the concept.

26. Record Group 218, "Records of the United States Joint Chiefs of Staff," CCS 381 U.S.S.R. (3-2-46), Section 16, "The Logistic Feasibility of Operations Planned, 'HALFMOON'," JLPC 84/16, 15 June 1948.

27. Record Group 319, "Records of the Army Staff," ABC Russia (22 August 1943) Section 1-A, J.I.C. 250/6, "Soviet Capabilities," 29 November 1947; letter, General Kenney (SAC A3-77 A5C) to Hq USAF, subject: Requirements for Initiation of Atomic Warfare, 4 June 1948.

28. Letter, General Hoyt Vandenberg to Commanding General, Hq Strategic Air Command, 13 July 1948, Air Force OPD A/AE 381 (Atomic Weapons Test). See also Memorandum for General Schlatter from William E. Kennedy, Office Assistant Operations for Atomic Energy, 27 August 1948, AF OPD A/AE 381 (HARROW).

29. Millis, pp. 452-55.

30. "History of Strategic Air Command 1948," Typescript history prepared by Headquarters Strategic Air Command, Offutt AFB, Nebraska, 1949, pp. 54-55. Hereafter cited as "SAC 1948." See Exhibit #35, Appendix 1 (509th Bombardment Wing), and Appendix 2 (43rd Bombardment Wing), n.p. The National Security Council recommended the deployment of B-29 bombers on 15 July. See Record of Actions by the National Security Council at its Fifteenth Meeting, 15 July 1948, NSC Action 77.

31. One exception occurred in February 1948, but it was during the time of an atomic test in the Pacific. A squadron of the 509th visited Japan for two weeks and conducted training and other classified work. See "SAC 1948," pp. 182-87.

32. Memorandum, General J. B. Montgomery, SAC Director of Operations to SAC Historical Section, 18 August 1949; "SAC 1948."

33. Comments cited from letter, General Leon Johnson, C/G Fifteenth Air Force to General McMullen, 13 July 1948; "SAC 1948."

34. Letter, General Kenney to General Whitehead, 9 August 1948, File 168.6008-3-Kenney, Simpson Historical Research Center.

35. Oral history interview with General Curtis E. LeMay by John Bohn, March AFB, California, 9 March 1971; Interview #736, Simpson Historical Research Center.

36. Record Group 319, "Records of the Army Staff," NSC 20 P&O 092 (12 July 1948), case 116/2. Letter, Secretary Forrestal to President Truman, 10 July 1948.

37. Ibid.

38. Ibid.

39. Ibid. Memorandum, Secretary Forrestal to the Executive Secretary, National Security Council, subject: Appraisal of the Degree and Character of Military Preparedness Required by the World Situation, 10 July 1948.

40. In late April, Senator Kenneth Wherry of Nebraska had unsuccessfully proposed legislation to return atomic bomb pro-

duction to the military during the world crisis. He felt the move would have great effect upon the Soviets. *New York Times*, April 26, 1948, p. 1

41. Millis, p. 461. For a detailed narrative of this meeting, see David E. Lilienthal, *Journals of David E. Lilienthal, Vol II: The Atomic Energy Years 1945-1950* (New York, 1964), pp. 387-92.

42. George Elsey, "Will We Use the Bomb?" Unpublished manuscript n.d. (circa Fall 1948), papers of George Elsey, Harry S. Truman Library.

43. Millis, p. 487.

44. Letter, General John Cannon to General Hoyt Vandenberg, 16 November 1948, Vandenberg Collection, Library of Congress.

45. Ibid.

46. The Western Union Defense Plan emerged from the Brussels Pact of January 1948, which included the Benelux countries, England, and France. The United States did not actively consider joining until July, in part because it did not want to provoke the U.S.S.R. Participating nations finally resolved organizational problems by October, although the United States did not sign the treaty until April 1949. See Harry S. Truman, *Memoirs*, Vol. II: *Years of Trial and Hope* (New York, 1956), pp. 243-51.

47. Record Group 319, "Record of the Army Staff," NSC 20/3 and 20/4, P&O 092 (2 November & 23 November 1948), case 116/10 and 116/13.

This article will appear as part of a chapter in the forthcoming Greenwood Press publication *A Hollow Threat: Strategic Air Power and Containment before Korea* by Harry Borowski. It is presented here with permission of the publisher.

AN ALTERNATIVE VIEW OF AIR INTERDICTION

Donald J. Alberts

IN THE past several years, doctrinal and lay discussion on the role of air interdiction have been widespread and varied, and some of that discussion has been worthwhile. Other times it has been more controversial and misleading than useful. In the long run, however, dialogue and discussion are proper peacetime avocations, no matter how temporarily misleading they may be. This article singles out the theorizing of Dr. Steven L. Canby, particularly his article "The Interdiction Mission—An Overview,"[1] not in a spirit of vendetta but out of necessity, since he has used the forum of the staff and war colleges and the military journals to do a disservice to the interdiction mission. In addition, Canby's work is a useful focal point for discussion since he serves as perhaps the most articulate and widely published spokesman of a school of thought critical of the USAF approach to interdiction. Besides refutation, however, the real purpose of this article is to present an air perspective of interdiction— what it is and is not, why it is useful and under what conditions, and what the implications are for force employment in the European scenario.

An air view is necessary simply because people steeped in the traditions of land warfare, especially Americans, often do not understand (or underestimate) the effects of air power in battle. The noted military historian and former ground officer Trevor Dupuy candidly admitted to such underestimation in his study of the effectiveness of the German armed forces through two world wars.[2] Canby's exposition appears to be rife with such errors in understanding and estimation.

What Air Interdiction Is Not

Canby—and he is not alone in this—mixes air operations and classifies them incorrectly. He confuses the method of accomplishment (bombing, for example, which may be the same in all operational areas) with the objective or reason for acting which he largely ignores.[3] This is most notable in his assignment of air base attack to the interdiction mission: It is not. Air base attack is one of the methods used to achieve air superiority and is an offensive counterair task. While my purpose here is to concentrate on air interdiction, clarity and completeness require a digression into the operational area of counterair.

Implicit in Canby's original analysis is the theme that air superiority is sought only to create a long-term favorable environment for the conduct of other air operations, among them interdiction.[4] This is only a part of the historical and doctrinal argument for air superiority. An equally important reason, from the perspective of war as a whole, is to prevent enemy control of the air so that enemy air power cannot destroy friendly ground forces at will. The last time American ground forces were even occasionally at the mercy of hostile air was in North Africa during late 1942 and early 1943; American ground commanders (Patton for one) found the situation intolerable.[5] This dissatisfaction led to a determined attempt to gain air superiority and the subsequent codification of the principle of centralized control of air assets, particularly tactical air, at a level high above the corps level of organization. American ground forces have remained unimpeded by the effects of enemy air from that time forth. Contrary to Canby's assertions, there were *two* air forces opposing ours in Korea; but the North Korean Air Force was quickly swept from the skies, and the Communist Chinese Air Force was largely kept bottled up in the far North as a direct result of a continuing campaign to gain and maintain air supremacy.

Other armies have not been so fortunate as to have had the protection afforded by their air forces as has the United States Army. Notable historical examples include the Wehrmacht in 1944-45, particularly in the West, the Egyptian Army in 1967, and the Red Army in 1941-43. Inability to gain air superiority (or, worse yet, being forced to accept a position of air inferiority) confers on the enemy the unrestrained

and often devastating use of air power against friendly ground operations. Air neutrality or superiority confers, then, a high probability and possibility of interdiction; aircraft systems provide the capabilities.

That a properly employed counterair campaign can quickly bring decisive resolution of a large conflict was most recently seen in the 1967 Six Day War. On the first day the Israeli Air Force literally destroyed the Egyptian Air Force by air base attack and air-to-air engagement. The psychological effect caused by such an event on land force performance is always incalculable, but the Israeli Air Force roamed freely over the Egyptian Army and contributed immeasurably to its physical disintegration as well.

Within the context of counterair, one must ask why the Soviets have invested what many view as inordinate resources into air defense of the Soviet bloc land armies. It seems obvious that the Soviets fear (and with good reason based on the lessons of 1941-43) the effects of unrestrained or unchallenged air power applied against them. The Soviets have procured and deployed antiaircraft artillery, interceptors, and, later surface-to-air missile (SAM) systems, in massive numbers. One does not rationally do so except from fear of air attack, for SAM systems have no other battlefield purpose.[6]

The notion of localized air superiority or the creation of a favorable air situation has particular application to the European environment of today. It is not just a question of "the size of the air inventory in the USSR, aircraft sheltering and the enemy-to-friendly force ratio."[7] (although these factors enter into the planning process) but rather a full consideration of the political and strategic setting in which a conventional war in Europe might occur. NATO cannot consider a preemptive counterair campaign.[8] For political and moral reasons, the strategic initiative must be conceded to the aggressor. Because the enemy will have the initiative, it is a question of attempting to make the best of what is inherently a less-than-

optimum situation. Counterair will be necessary in some measure to protect friendly ground operations and allow friendly air operations to proceed without devastating attrition. It is not, as Canby implies, a question of performing counterair so that NATO air can at some later time perform interdiction. Rather, it is because the enemy will have the initiative, and since the exact form of his offensive cannot be foreseen, one expects that all forms of air operations will have to be carried out simultaneously in order to stop the enemy thrust. The priorities given to the various forms of air operations will be a command decision based on a political and military assessment of the situation existing at the time of war initiation. A change in the scenario should cause a corresponding change in the most efficient apportionment of air power. Control of the air remains the foundation of success for both the air and land elements of NATO. One cannot win the war without the other at the conventional level of conflict.[9]

Canby misinterprets NATO doctrine and air history by citing the target groups of:

> airfields, nuclear delivery systems, marshaling yards, power plants, political centers and the like. These target categories can be classified into *air base attack, strategic interdiction* and *supply interdiction.*[10]

Well, not quite! Air base attack may be conceptually similar to interdiction (destruction, neutralization of enemy air elements on enemy airfields before those airplanes can be brought to bear on friendly forces), but it has never been included in interdiction by air power enthusiasts.[11]

The phenomenon of so-called strategic interdiction presents a conceptual problem because its existence in the past is arguable. I would not deny the possibility of strategic interdiction, for I feel strongly that there is and should be. The confusion here really centers on what is strategic and what is tactical. Much of what Canby describes as strategic interdiction might better be described as stra-

tegic conventional bombardment. The difference lies in intent. In air power terms, *strategic* is properly used in conjunction with the intent to affect the enemy's society, precluding either the will of the enemy to continue his efforts, his capability to continue them, or both. *Tactical*, on the other hand, refers to the battlefield.[12]

Harking back to World War II, what was the difference between bombing marshaling yards in Normandy just prior to D-day and bombing marshaling yards in Munich or Frankfurt am Main? Both engagements used B-17s. However, in Normandy, the desired effect was the isolation of the battlefield (tactical); in bombing Munich and Frankfurt, the desired effect was the disruption of the enemy's means of production and his ability to shift forces, raw materials, and other resources between theaters as well as to demonstrate to the German population that they were not safe. This latter intent was strategic, affecting the enemy's ability to wage war. Admittedly, the conceptual dividing line is a fine one—but it is there. Thus, much of what was done in the name of interdiction in the skies over and against the territory of North Vietnam was not interdiction.[13]

Strategic interdiction *has* existed and may exist again. An example of strategic interdiction, again from World War II, was the campaign waged against Japanese shipping in the vicinity of the home islands by submarine and tactical air operations in the later stages of the war. The effective defeat of Japan occurred without defeating the main Japanese armies in the field and without putting troops ashore on the home islands. These actions against the sea lines of communication were not directed at interdicting military supplies from reaching the field so much as preventing raw materials from reaching the home islands to be converted into the materials of war.

That leaves what Canby refers to as supply interdiction (which is in fact air interdiction) operations undertaken with the purpose of isolating enemy forces in the field from their

sources of needed consumables. Canby's error here is to assume that supply interdiction (other than the two categories already discussed) is all that interdiction consists of.

What Air Interdiction Is

The NATO definition of *interdict* is: "to isolate, or seal off an area by any means; to deny the use of a route or approach."[14] The NATO nations have defined *air interdiction operations* as:

> those (tactical air operations) conducted to destroy, neutralize, or delay the enemy's military potential before it can be brought to bear effectively against friendly forces at such distance from friendly forces that detailed integration of each air mission with the fire and movement of friendly forces is not required.[15]

In NATO, interdiction operations are clearly tactical.[16] In further explanation, NATO tactical air doctrine holds that:

> interdiction targets may include troop and vehicle concentrations, supply trains and convoys, amphibious forces, communications centres and headquarters, bridges, railways, roads and waterways.[17]

The important point is that air interdiction is directed against:

> combat forces and supplies when they are traveling along lines of communication, rather than locating and attacking forces that have reached the close combat area.[18]

Interdiction can be directed against supplies, but—and Canby seems to ignore this—interdiction is also directed against enemy forces and equipment. However, this mistaken perception is not uncommon. Many writers not familiar with air power doctrine make the same error, including professional air force officers. In the case of Americans and some of our European allies, this error might stem from our recent experience in Vietnam where interdiction became associated with the destruction of bridges, the cutting of roads, and the killing of trucks. Again, this is interdiction, to be sure, but not the whole of interdiction.

Has Interdiction Been Successful?

Canby limits his critique of interdiction to the interdiction of supplies only, thus making it difficult to refute his claim that it was notoriously unsuccessful in both Korea and Vietnam and resulted in very great losses for little gain. In fact, he goes so far as to state:

The empirical evidence is conclusive that the goal of forcing a military collapse of the deployed forces was not achieved.[19]

Ignoring for the moment that all military activity, including ground force offensives, failed to produce the result of a military collapse of the enemy deployed forces, one must look at the goal of interdiction and the nature of the empirical evidence.

The goal of interdiction is the isolation of the battlefield. There is only one historical instance I am aware of in American practice where tactical supply interdiction alone attempted to achieve the results claimed by Canby. This was Operation Strangle during the Italian campaign. The lesson to be learned, as it supposedly was then, is that air power alone cannot totally deny to the deployed enemy an ability to fight. "Strangle" was used against an enemy on the defensive largely operating out of prepared positions. But "Strangle" was not the whole of the operation. One must also consider the follow-on, "Diadem." The latter operation was the joint land-air activity against the same enemy forces in the same prepared positions. Interestingly enough, German rail activity was halted south of Florence as a direct result of "Strangle," and the effect of supply interdiction "would soon be evident when intensive ground pressure was combined with the air interdiction campaign."[20]

As for the empirical evidence, perhaps it is best to say that there is little, one way or the other, simply because very little analysis using acceptable data manipulation techniques has been performed. Thus, we are often forced to rely on opinion based on inspection of data, rather than on evidence. A rather impressive piece of evidence does exist in reference to the Italian campaign. This analysis is found in a recent book by Trevor Dupuy and was partially an outgrowth of his earlier realization that he (and other ground-trained combat officers) seemed to have underestimated the effectiveness of air power. Dupuy demonstrates that in the Italian campaign when interdiction was applied, interdiction increased the effectiveness of friendly combat power by about six times more than the expected effectiveness.[21] (And, although not the issue here, his analysis also demonstrates that interdiction is more effective than close air support, roughly by a factor of three.)[22]

This type of analysis has not been performed for other wars and other campaigns. We do not have access to enemy data. We have only the empirical evidence of the opinions of ground commanders who are not normally in a position to see the results of interdiction.[23] Air commanders often see things differently. In Korea, for example,

Events since 25 June 1950 have clearly indicated that air operations have been one of the most decisive elements in stopping the enemy's offensives and reducing his capacity to wage ground warfare.[24]

In tandem, close air support and interdiction, in the first year of the Korean War, inflicted 14 percent of the enemy casualties (most of which should be attributed to close air support) and:

destroyed or damaged 391 aircraft, 893 locomotives, 14,200 railroad cars, 439 tunnels, 1,080 rail and road bridges, 24,500 vehicles, 1,695 tanks, 4,500 guns, and 125,000 buildings which sheltered enemy troops or supplies.[25]

The aircraft referred to above were destroyed as the result of counterair operations. All other targets destroyed could have been, and most were, the results of interdiction. The point is not to impress with numbers. Rather, it is to suggest that the total support effort achieved something. It destroyed targets that the ground forces did not have to face. The enemy com-

pany or battalion or tank destroyed 15 or 30 kilometers behind the line does not enter into the ground commander's battle at the point of contact.

In Korea, we have also the evidence of enemy sources:

> I would like to tell you frankly that in fact without direct support of your tactical aerial bombing alone your ground forces would have been unable to hold their present positions. It is owing to your strategic air effort of indiscriminate bombing of our area, rather than your tactical air effort of direct support to the front line,that your ground forces are able to maintain barely and temporarily their present positions. . . . Without the support of the indiscriminate bombing and bombardment by your air and naval forces, your ground forces would long ago been driven out of the Korean peninsula by our powerful and battle-skilled ground forces.[26]

Taken in conjunction with actual air operations, the implication, then, is that interdiction had a far more serious effect on North Korean and Chinese operations than did close air support. Of course, we have no evidence whatsoever of what kind of casualties Allied troops would have taken in the absence of interdiction.

Vietnam is yet another problem. But one is forced to ask if interdiction can be overly meaningful in an insurgent war characterized by small unit guerrilla enemy actions. In Vietnam, enemy supply arrangements were extremely elastic, consisting more of a "push" than a "demand" system. The enemy was able to make extensive use of sanctuary areas for stockpiling. Nevertheless, one must also ask in retrospect how much of the Communist failure in the Tet offensives of 1968 and 1972 was due to inadequate supplies. The question is open.

Turning again to the current situation in Europe, Canby rules out interdiction operations directed against the enemy logistical network because of:

- The difficulty of blocking a dense transport net with conventional ordnance.
- The inability to loiter and to attrit enemy vehicles in a sophisticated air defense environment.

- The ability of an attacker to anticipate requirements by forward stockage.
- The time-lag before interdiction affects deployed forces.

The result is that supply interdiction cannot accomplish its objective of strangling the forward forces, nor, and more important, *can it disrupt enemy operational planning and command.*[27]

Nonsense! The first error in analysis is the artificial and counterfactual separation of supply interdiction from interdiction in general. A general criticism of the above assertions is that they constitute half-truths at best. They are dependent on a particular unfolding of the war-fighting scenario and a state of mobilization of Warsaw Pact forces that may not hold in reality.

Now to deal with each point in turn: certainly, it is difficult to completely block a dense transportation net with conventional ordnance. However, one does not have to cut off a supply network completely to be effective. Here Soviet logistic doctrine must be considered as well as the anticipated nature of modern warfare.

If, in fact, the Middle East War of 1973 and published Soviet tactical doctrine are any indication, a war in Europe will be characterized by extremely high rates of expenditure for fuel and ammunition. For the offensive to be sustained in the face of active resistance, these consumables must be continuously replaced. Furthermore, the central problem facing the Soviet logistical system will be "getting the right material to the right place at the right time."[28] The Soviet division carries its own logistic tail with it, does not depend on lines of communication, and is fully self-contained. However, resupply of the division is the responsibility of the Soviet Front through the Field Army. It is the connecting links in the operational rear (Front to Army) and between the operational rear and the troop rear (Army forward depot to division rear) that present the target set. These portions of the supply train are very much dependent on road traffic—that is, they are dependent on trucks and roads.[29]

Slowing the rate of enemy's advance in battle by ground pressure greatly increases the demand on his operational rear system. Disruption of that system through air interdiction should in turn delay the arrival of priority items such as (1) ammunition, (2) POL, (3) spares and technical equipment, (4) food, medical supplies, and clothing[30] at those points and at that time necessary to further the advance. The problem is not just to cut roads or drop bridges but to cut roads to force trucks off the road and into alternate paths at key times. Timely road-cutting creates chokepoints, which in turn create a target rich environment.

Thus, the inability of interdicting aircraft to loiter could be irrelevant to the entire problem if our target generation process is efficient. The Soviet supply system must continue to move to do its job. Stop it, delay it, hold it up, and the objective of degrading the ability to sustain forward movement or sustained combat is partially achieved. Stop it locally, follow up and attrit that particular group of trucks. This sequence, repeated many times over in a short span of time should tremendously compound the enemy's problem of adhering to the operational plan, thus placing increased demands on the control process.

An attacker's ability to anticipate and forward stock is clearly an advantage. But once supplies are placed forward in Front depot complexes, Army base depots, or even Army forward depots, they are grouped and, if located, become lucrative targets. There are three critical points in the Soviet ammunition resupply process, at least two of which are subject to interdiction and disruption. Ammunition is unloaded and reloaded at regiment, division, and Army dumps. Wherever this process occurs, a target is created. The other critical node lies in the dump itself.

> Once ammunition is dumped (usually necessary, often desirable) it becomes difficult to reorganize its reissue quickly while fulfilling the need for camouflage and protection. This is an especial problem, as users all tend to want to draw fresh

supplies at the same time. Solutions suggested are . . . an improvement in traffic control, . . . and more use in the field of centralized automated loaders, lift trucks, etc., as already the norm in the depots.[31]

Fuel resupply, the second highest Soviet priority, also is beset by transfer and storage problems. By Soviet admission, refueling of vehicles and transloading of fuel takes too long. For all supply services:

> Rear control is still far too slow and cumbersome especially for effective support of a war of manoeuvre. Orders take too long to issue and implement. Preplanning is not used often enough and delays are frequent.[32]

The time lag, then, is the focus of our attention. The more intense the fighting and the more rapid the advance, the more critical specific time segments become. On a European battlefield, we are not talking of weeks and months of supply buildup as in World War II and Korea.[33] We are talking about hours and at most days. The operational intent for friendly air interdiction in this regard is not destruction or attrition per se but rather the disruption of the flow.

The Front depot complex may be located as far as 250 kilometers from the forward edge of the battle area (FEBA). The Army forward depot would typically be found 50 km to the rear of the Soviet FEBA and the Army base depot 100 km closer to the rear.[34] Ground firepower does not extend to these areas. Air power does. Moreover, air power is not constrained by considerations such as corps boundaries. It is capable of being concentrated on the areas from which the main enemy thrusts emanate.

The time factor, when considered in terms of the war as a whole, is more difficult to deal with. In his analysis of the Italian campaign in World War II, Dupuy points to two weeks as the time period required before severe degradation of the German ability to fight occurred.[35] However, the German Army was on the defensive and fighting from prepared positions. For

Air interdiction in Korea, 1950-51

Air interdiction was responsible for extensive damage in Korea. B-26s of the 452d Bombardment Wing (right) destroyed vital targets in North Korea, including the railroad marshaling yards and locomotive works at Wonsan (facing page). In the first year of the war, 893 locomotives and 14,200 railroad cars were destroyed or damaged.
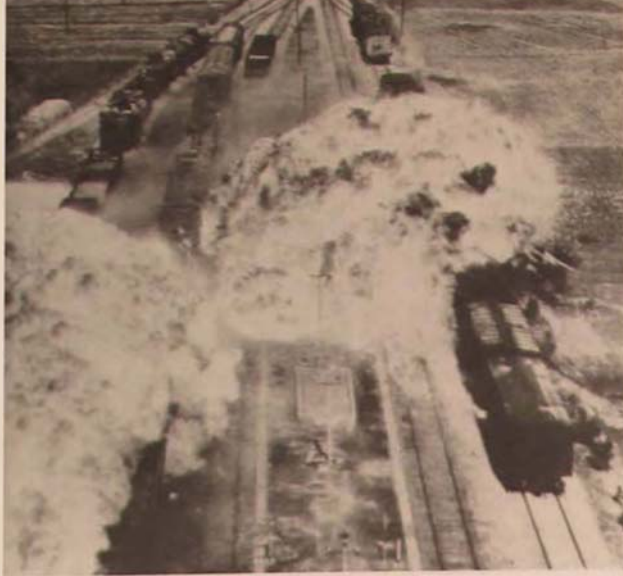
B-26 light bombers were also responsible for the strike near Wonsan harbor (left) in February 1951. Recurring explosions following the initial impact suggest that the target was an ammunition warehouse.

a war in Europe, the Soviets will be on the offensive, which would seem to be more dependent on timely and consistent flow of ammunition and fuel if momentum is to be maintained. That some minimum time will pass before the effects of interdiction on enemy operations become noticeable appears to be empirically substantiated. But once the point is reached, and if pressure is kept up, the effects will surely increase in a nonlinear manner.[36]

If one is to follow the logic of supply system interdiction a bit further, one quickly realizes that the key to success does not stem from any of the four conditions asserted by Canby but rather from the ability to learn where the key supply nodes are located. This is a function of reconnaissance and electromagnetic combat. These nodes have physical and eletromagnetic signatures, despite effective camouflage and cover. They can be found, they can be struck, they can be destroyed.[37]

Battlefield Air Interdiction

Canby describes battlefield air interdiction (BAI) as:

> the second generic type of interdiction. It seeks to destroy the road net, vehicles and supplies approaching the forward edge of the battle area (FEBA). More fundamentally, battlefield interdiction has the potential of disrupting the enemy's operational plans and—particularly in conjunction with offensives and major counterattacks —of dislocating the enemy command system. The random destruction of bridges and vehicles across a wide front has little military utility other than costing replacement losses which can only be significant in a long-term sustained conflict.[38]

Almost, but not quite! Battlefield air interdiction is not a "second generic type" of interdiction; rather, it is a recognized category of air operation encompassed within the generic label of offensive air support. The NATO nations have ratified the concept of BAI that is contained in the NATO doctrinal and procedural manual, Allied Tactical Publication (ATP) 27 (B), *Offensive Air Support*.[39]

The purpose of BAI is:

> to bring airpower to bear on those enemy forces not yet engaged but positioned to directly affect the land battle. To be more specific, and place the concept in its most complex environment, the targets which BAI is to deal are enemy second echelon regiments or divisions, moving toward contact with friendly troops already engaged by enemy first echelon regiments/divisions. . . . [40]

As a concept, BAI was needed to correct some fundamental misperceptions held by land force personnel (and some air forces personnel also) about the nature of close air support and its purpose on the one hand and interdiction and its purpose on the other. The view that interdiction is something the Air Force does very far away from the land battle and with little relevance to it is all too prevalent among U.S. Army personnel. This view stems largely from our experience in Vietnam, where there was some empirical evidence to support it.[41] We in the United States have also fallen into the incorrect habit of terming all air support delivered on the friendly side of the fire support coordination line (FSCL) as close air support (CAS), restricting air interdiction to the far side of the FSCL—a position never, in fact, accepted in Air Force doctrine. Somewhere between Korea and today we also lost the concept of that category of direct air support which was not "close." BAI helps to correct the misperception. "CAS requires detailed integration of air strikes with the fire and movement of friendly ground forces: while BAI, on the other hand, does not."[42] BAI is target-set centered. The focus is on forces. In the European context, the only place so far where BAI has international doctrinal legitimacy, CAS affects the ground commander's battle now, BAI affects it in the near-term future (an hour, a day?), and air interdiction affects it at some further future time. The level of battle involved also climbs. CAS affects the battalions, brigades, and divisions; BAI affects the division, corps army group;[43] and air interdiction the army group and theater. In historical perspective, BAI equates to the use of air power to protect the left flank of Patton's 3rd Army by the Ninth Air Force

after the St.-Lô breakout in 1944. BAI is neither CAS nor air interdiction as commonly perceived but shares elements of both.[44]

The rest of Canby's exposition on BAI is, in the main, accurate, though some points of uncertainty are stated as fact. I would not necessarily agree that BAI is to be most effectively applied at the point of penetration, nor would I restrict application to:

> the penetration area behind the line of contact, at the penetration base to seal off the penetration or in the *cone* (or "funnel") extending from the anticipated point of penetration slanting outward and backward 100 kilometers or so into the attacker's rear where his reserves are assembled.[45]

The Soviets have historically shown a tremendous ability to shift forces laterally in order to mass for, or exploit, a penetration. The key lies exactly where Army doctrine tells us it should—in identifying the main axis of attack. While the terms *cone* and *funnel* do not bother me as Canby uses them, BAI would be better used to seal off the penetration along the side of the cone laterally along the FEBA. Again, questions remain to be answered: Where is the enemy? What is the direction of his movement and the relation of that movement to his main effort? And what are the army group commander's counterplans?

I would also take issue with Canby's second argument for his chosen point of application:

> ... while Soviet air defenses are strongest in the cone, they are weakest in the penetration area itself.... only a fraction of his organic air defense units can be deployed in an overwatch position.... In the penetration area, the radar redundancy and overlap and the weapon density in depth characteristic of Soviet air defenses will not be present, while ground air defense and tactical fighters cannot be coordinated.[46]

I am not at all certain that the facts support Canby's thesis. The Israelis in 1973 seem to have lost more airplanes trying to provide CAS and very close BAI than they lost in deeper penetrations. Our NATO allies, and many in the United States Air Force, strongly feel that CAS without adequate suppression of enemy air defenses (SEAD) will involve very high attrition of friendly aircraft. It seems, further, that the points of enemy penetration will be the very points at which CAS is most in demand. Therefore, much of what Canby asks for under BAI is CAS by another name.

If the enemy is in fact advancing under echelonment, as we expect, his forces closest to the front will be bunched up. The density of enemy air defense fire units is likely to be quite high, not to mention the effects of massed, unaimed, small arms fire, a practice known to be effective against aircraft.[47]

On the other hand, the operational reserves or second echelon units in the cone or moving laterally into the cone might have pre-positioning advantages, but if stopped and dispersed, as implied, some features of the Soviet air defense net play into the strength of our specialized SEAD assets. The problem is analogous to that posed by a zone defense in American professional football. Both the long "bomb" and running up the middle are to be eschewed in this tactical situation—the "short aerial under the zone coverage preferred." Further, due to certain advantages of specialized SEAD assets, it is possible to isolate certain air defense players more easily away from the points of penetration. The question is open, and tacticians within the Air Force are studying, analyzing, and suggesting appropriate courses of action. I personally feel it is a tactical problem that must await more concrete definition of the situation. Canby may be right; we simply cannot say at present.

INTERDICTION is an application of air power to achieve a particular effect—the isolation of the battlefield. Distinctions often made as to supply interdiction or mobility interdiction refer to the target set, which is not quite the same thing conceptually.

Interdiction is not a panacea, as many have felt. As in any military application of force, errors can and have been made. Probably the largest error typically made is the failure to

concentrate air power in time and place. The maximum effect can be achieved by flooding a given area with air and attacking everything that moves. But one needs sufficient assets to perform this feat—one also needs air superiority.

One of the more successful applications of air power in support of ground operations was the interdiction of Normandy in 1944. From that time forth the Wehrmacht could not move, reinforce, or resupply during the day in fair weather. The campaign of 1941-43 produced a similar effect on the Red Army, but not nearly as intensive. The Luftwaffe effort was fragmented and applied along the entire front. American use of air power in Normandy and afterward was tied more directly to the main strategic thrust.

One can mitigate the error of diffusion of effort if one has sufficient resources. As in other areas, this has been one of the Soviets' great strengths. Mass is automatic concentration if one possesses sufficient numbers. In the past, the United States has also enjoyed quantitative and qualitative advantages. This does not seem to be probable for a European war in the Central Region. It would be an error in application to attempt to interdict along the entire front, just as it was an error for the Germans to do so in the Soviet Union. This practice reduces air to the role of flying artillery, something that the Luftwaffe came to view as a cardinal error in Russia.[18] As the war progressed, the Luftwaffe became more closely tied to smaller units of the Wehrmacht and the scheme of maneuver of lower echelon commanders. The Luftwaffe continued to destroy tanks and Soviet equipment, but by this diffusion the ability to apply concentrated power was lost. In short, air lost its strategic value in terms of the theater battle. The Soviets could afford to make air flying artillery late in the war. They had the numbers.

Given that any conventional war in Europe will be initiated by the Warsaw Pact (thus the WP will have the first initiative), as defenders, NATO's air effort automatically will be somewhat diffused since we must fulfill multiple objectives. The WP may or may not start the war with an air operation. They may or may not mass air over their thrusts. They may or may not hold their air for use primarily in defense. NATO air forces must be prepared to perform air defense and CAS, neither of which can wrest the initiative from the enemy. Interdiction and offensive counterair force the enemy to react, force him to meet the unexpected over wide areas.

Given the total demands on NATO air, it is highly unlikely that the majority of air could be apportioned to interdiction. We are thus faced with at least a relative shortage of assets. The problem then boils down to getting the maximum effect possible from a limited resource. To do this, a combination of tactical disruption, destruction, and deception is necessary. We do not have the luxury of waiting for lucrative targets to present themselves, nor can we afford to attempt to destroy only tanks. As previously argued, a more effective method of "controlling the arrival rate of force units" at the FEBA in order to allow ground firepower and maneuver to meet the threat (after all, we have to resupply, replace, regroup, etc., particularly when on the defensive) without enemy surge might well be in disrupting the flow of supplies and forces to the front. We identify the main thrust and then isolate it by creating disruption in the traffic flow of second echelon regiments and the supply of engaged forces. The idea is to force a faster tempo of adjustments on the enemy than he can handle to keep his attack plan and momentum going.

Air is inherently an order of magnitude faster than ground units in moving to meet surface movement. If there is a multiplier effect in this form of warfare, it lies in getting the enemy to look over his shoulder and lose sight of his objective. Enemy units and supplies that never reach the point of penetration do not have to be faced by defenders. History seems to indi-

cate that the farther from the FEBA the enemy's power sources can be attacked the better. NATO ground forces need time, as well as space, to defend successfully. Interdiction buys that time.[19] It is one of the Air Force's func-

tions to organize, train, and equip itself to do this in the most effective manner in order to support the theater commander and his scheme of maneuver.

Hq USAF

Notes

1. Lieutenant Colonel Steven L. Canby, USAR, "The Interdiction Mission—An Overview," *Military Review*, July 1979, pp. 22-27.

2. Colonel Trevor N. Dupuy, USA (Ret), *Genius for War* (Englewood Cliffs, New Jersey, 1977), p. 3. "It had become obvious that I, as a retired American ground-force officer, had brought two professional prejudices with me to the formulation of my model: I had underestimated the effects of airpower. . . ."

3. Canby, p. 24.

4. Ibid., pp. 23-24.

5. There are other related incidents after North Africa wherein air superiority was at least in question (e.g., Anzio).

6. Almost as an aside, one might ponder the Egyptian and Syrian use of their air forces in the 1973 war and the use of their air defense ground-based assets. The essence of air superiority is to control the air and use it for one's purpose. If the Soviet ground-based air defenses can prevent friendly air attack of their ground troops, they effectively can control the air. On the other side of the coin, if friendly air forces are able to prevent Soviet/Warsaw Pact tactical air from performing air operations against our troops and rear areas, then a minimum condition for success will have been achieved. TACAIR on both sides will be neutralized to be sure, but then the land forces have an equal opportunity to demonstrate power. Unfortunately, the Soviets would seem to have a tremendous edge in this regard. NATO needs its offensive use of TACAIR to offset the WP ground advantage as well as to beat off enemy air. Although this work will be referred to in more detail later, the reader should refer to T.N. Dupuy's *Numbers, Predictions and War* (1979), p. 77 for the effects of air power on ground action. These are reflected historically for the cases studied in eight ways: "(1) The force strengths (S) of both sides are increased directly by the OLI (operation lethality index) value of direct air support aircraft; (2) Relative mobility is enhanced for the side with air superiority; (3) Vulnerability is reduced for the side with air superiority; (4) The effectiveness of artillery is enhanced for the side with air superiority; (5) Vulnerability is increased for the side without air superiority; (6) Artillery effectiveness is reduced for the side without air superiority; (7) Direct air support is degraded for the side without air superiority; (8) Supply capability is degraded by air interdiction." Air power enthusiasts have been trying to convince skeptics of this for years.

7. Canby, p. 23. It is interesting to note that in Korea we achieved air supremacy over the battlefield, but we had to maintain it continually by offensive counterair farther north. We lost localized air superiority over "Mig Alley" and over the Yalu airfields such as Sinuiju. Air base attack involved too high a price for the temporary effects achieved (enemy basing in China prevented eradication of the enemy air force in any case). See Robert Frank Futrell, *The United States Air Force in Korea, 1950-1953* (New York, 1961), pp. 265-84, 370-99, 471-79.

8. This is in line with the political nature of the alliance. There is no serious consideration of such in the literature. However, an initiation of tactical nuclear warfare might have offensive counterair as a first wave, depending on the tactical situation leading to the political decision to employ tactical nuclear weapons.

9. See note 7 above. Historical examples abound. The exception might be in the 1975 defeat of Army of the Republic of Vietnam. This truism does not hold for subconventional warfare, but those cases might indicate a misuse of air power. The issue is far beyond the scope of this article.

10. Canby, p. 23.

11. In NATO doctrine, as well as in USAF doctrine, the purpose of offensive counterair is "to destroy, disrupt or limit enemy air power as close to its source as possible." Allied Tactical Publication (ATP) 33A, *Tactical Air Doctrine*, p. 4-3. See also ATP 42, *Counter Air Operations*. ATP 42 is in the ratification process, having to date (May 1980) been ratified by Germany, Norway, Belgium, Netherlands, Portugal, United Kingdom, United States, and Denmark. The ratifications of France, Italy, and Greece are expected. (Iceland and Luxembourg do not have air forces.) If one stretched the term *interdiction*, one could make a claim that air base attack fits but is not the purpose of air base attack to engage air power facilities with air power vehicles? This hardly involves isolating a battlefield.

12. It is unfortunate, but the word *strategic* has been very much misused, particularly by Americans. It often is used to refer to a set of performance capabilities such as land and load. Today's tactical fighters carry more than yesteryear's strategic bombers.

13. See Guenter Lewy, *America in Vietnam* (New York, 1978), particularly pp. 374-417. This book has been hailed as the most objective treatment of the war to date. Rolling Thunder (1965-68 bombing campaign of the North) had the initial objectives of "(1) to signal to Hanoi the firmness of U.S. resolve to defend South Vietnam against communist subversion and aggression; (2) to boost the sagging morale of the GVN; (3) to impose increased costs and strains upon the DRV if it continued its support of the southern insurgency." (p. 375) The interdiction aspect was added later. But from personal experience, the concentration of force and singleness of purpose necessary for interdiction to succeed was not possible within the overall political/resource context. Linebacker (I and II, the 1972 campaigns against the DRV) is credited with greater results at less cost. The interdiction aspect was higher in 1972 than in 1967. There were more resources available, and local commanders had more say in the execution of the mission. A greater concentration of force was thus possible.

14. Allied Administrative Publication (AAP) 6, *NATO Glossary of Terms and Definitions for Military Use*, April 1977.

15. ATP 33(A), para. 417.

16. It is almost a definition. The political goal of combat operations is to defend and restore control over territory lost. The only explanation of interdiction is in ATP 33, *Tactical Air Doctrine*. NATO does not own any strategic forces; therefore, there is no explicated version of strategic air power. However, ATP 33(A) mentions "other targets" that could be taken as "strategic interdiction." See ATP 33(A), para. 421.

17. ATP 33(A), para. 418.

18. ATP 33(A), para. 419.

19. Canby, p. 25.

20. Richard E. Dupuy and Trevor N. Dupuy, *The Encyclopedia of Military History*, revised edition (New York, 1977), p. 1104.

21. T. N. Dupuy, *Numbers, Predictions and War*, pp. 91-94.

22. Ibid.

23. Nowhere is the difference of opinion more severe than with the United States Marine Corps. Not only is close air support the only answer, but that close air support can only be supplied very effectively by Marines. For an example of the official emotion this causes, see Lynn Montross, Major Hubard D. Kuokka, USMC, and Major Norman W. Hicks, USMC, *U.S. Marine Operations in Korea 1950-1953; The East-Central Front*, vol. 4 (Washington, Historical Branch, G-3, Headquarters U. S. Marine Corps, 1962), pp. 143-44, 185. Even though the Marines received the majority of their requests (using Marine aircraft) and at times the Marine divisions get more CAS sorties than used for four Army divisions, interdiction is consistently termed ineffective. After all, the enemy was still there and his soldiers had rifles and ammunition. Therefore, interdiction could not possibly be working.

24. General Otto P. Weyland, USAF, quoted in Futrell, p. 313.

25. Futrell, p. 344.

26. Lieutenant General Nam Il, "senior Red delegate," August 1951, quoted in Futrell, p. 345. Like many ground-trained personnel, the general was understandably not overly informed of air doctrine and did not know the categories of air effort actually applied against his side.

27. Canby, p. 25.

28. C. N. Donnelly, "Rear Support for the Soviet Ground Forces," *International Defense Review*, vol. 12, no. 3 (1979), p. 346.

29. Ibid., pp. 346-47.

30. Ibid., p. 346.

31. Ibid., p. 349.

32. Ibid., p. 350.

33. While forward stockage can be used, once the offensive starts these supplies, particularly munitions and fuel, must be moved farther forward. In Italy, the Germans eventually used all available transport to move supplies and thus was not available to move troops. The Soviets have also shown a tendency to use whatever is available.

34. Donnelly, p. 342.

35. T. N. Dupuy, *Numbers, Predictions and War*, p. 84.

36. As an aside, air doctrine really does not have a parallel for the ground dictum of pursuit. It is sometimes considered under the principle of the objective, but this is an area to be explored. Once the enemy is hurting, it would perhaps seem preferable to continue what is a successful operation toward complete denial than to switch to some other objective. For counterair, this principle is understood and applied almost without thought. In a European scenario, one might suspect that the effort would be gradually extended farther back behind the enemy FLOT, which should make it easier going for the ground force to achieve counterattack or offensive objectives.

37. The logic of the thought does not necessarily end in destruction of the dumps. It might be better to monitor the flow, create bottlenecks, and destroy the trucks, force rerouting, etc. This would maximize the load on the enemy command and control net. Destruction of a dump would remove it but allow the enemy to switch to other dumps for resupply. The process would have to be repeated many times. However, timely interruption of flow leaves the problem running, so to speak. The enemy must cope, and at the same time, the receiving units are out of ammunition or fuel and thus exploitable.

38. Canby, p. 25.

39. The United States ratified ATP 27(B) in September 1980. NATO has authorized the printing and distribution of the document. Formal promulgation was to occur in the summer of 1980.

40. Colonel Bruce L. Brown, USAF, Lieutenant Colonel Thomas A. Cardwell III, USAF, and Major D. J. Alberts, USAF, "Battlefield Air Interdiction," *Doctrine Information Publication*, No. 7 (Hq USAF/XOXLD, 1979), p. 1.

41. After all, the interdiction areas were in North Vietnam, Laos, and later Cambodia. It is interesting to note, however, despite Canby's assertion that supply interdiction is futile, that the Laos and Cambodian incursions had as one of their objectives the destruction of enemy supplies.

42. Brown, Cardwell, and Alberts, p. 3.

43. Or, field army. The United States Army currently has no echelon above the corps. In Europe, the field army level is bypassed in the Central Region, having two army groups instead. Some of the allies still use the field army.

44. BAI can best be viewed as a coordinating device when it is operating inside the fire support coordination line. It allows air to be applied against a target set as that set moves. It is particularly appropriate for the defensive and counterbreakthrough applications. For the offensive, preplanned close air support and air interdiction could achieve the same results. BAI was developed to deal with echelonment, but the concept is not new.

45. Canby, p. 26.

46. Ibid.

47. There is a widespread tendency to think in terms of aimed fire. However, barrage fire from automatic weapons and small arms can be quite effective against low-flying aircraft. It has been effective in all wars that the United States has fought. The fire merely has to be in front of the aircraft. Attempting to track is counterproductive from the enemy gunner's point of view.

48. See Generalleutnant Hermann Plocher, *The German Air Force Versus Russia*, 3 volumes covering 1941, 1942, 1943, revised and edited by Harry Fletcher, USAF Historical Studies, Nos. 153, 154, 155; and, Study No. 163, *German Air Force Operations in Support of the Army* (Maxwell AFB, Alabama, 1967). There is a constant complaint of having moved from "indirect support" to "direct support"; more and more from operations similar to AI to those resembling CAS.

49. It is for this reason that I would not rule out, as some have done, the so-called deep interdiction or strategic interdiction against the supply lines across Poland and East Germany. While not precisely a second battle problem, such a campaign would depend on such factors as the arrival rate of reinforcements from the CONUS versus that of second to "n" echelon armies arriving from the Western U. S. S. R, the state/degree of mobilization in NATO, warning time, the air balance, the degree of air superiority, the expected cost, other requirements both military and political, etc. It is not a simple problem lending itself to a simple solution.

THE ROLE OF SYNTHETIC FUEL IN WORLD WAR II GERMANY

implications for today?

Dr. Peter W. Becker

THE United States is faced with an acute energy problem. Our dependence on imported petroleum, which accounts for half of the country's consumption, has caused rising balance of payments deficits that weaken the dollar and contribute to inflation. More worrisome in the long run for the future of this country is the realization that eventually most oil deposits, both foreign and domestic, will be depleted. This grim specter is accompanied by a lack of control over foreign supplies, leaving us dependent on the goodwill and mercy of the oil-producing states.

There are, of course, other sources from which energy can be derived, sources such as nuclear fission, nuclear fusion, solar and thermal power, and the like. But for the foreseeable future they either present many environmental threats or are not yet sufficiently developed to replace our dependence on foreign oil supplies. A sensible energy policy for the time being no doubt would rely on many different sources of energy until a more efficient, effective, and safe method has emerged. Such an approach will include the production of synthetic fuel derived from coal. This method was first effectively used by the Germans

during World War II, so an examination of Germany's situation at that time could be instructive.

As a highly developed industrial state, Germany was dependent even in peacetime on external sources for an adequate supply of oil. Even though Germany's 1938 oil consumption of little more than 44 million barrels was considerably less than Great Britain's 76 million barrels, Russia's 183 million barrels, and the one billion barrels used by the United States, in wartime Germany's needs for an adequate supply of liquid fuel would be absolutely essential for successful military operations on the ground and, even more so, in the air.[1] For Germany, it was precisely the outbreak of the war in 1939 and the concurrent termination of overseas imports that most endangered its ability to conduct mobile warfare.

German oil supplies came from three different sources: imports of crude and finished petroleum products from abroad, production by domestic oil fields, and syntheses of petroleum products from coal.

In 1938, of the total consumption of 44 million barrels, imports from overseas accounted for 28 million barrels or roughly 60 percent of the total supply. An additional 3.8 million barrels were imported overland from European sources (2.8 million barrels came from Romania alone), and another 3.8 million barrels were derived from domestic oil production. The remainder of the total, 9 million barrels, were produced synthetically. Although the total overseas imports were even higher in 1939 before the onset of the blockade in September (33 million barrels), this high proportion of overseas imports only indicated how precarious the fuel situation would become should Germany be cut off from them.[2]

At the outbreak of the war, Germany's stockpiles of fuel consisted of a total of 15 million barrels. The campaigns in Norway, Holland, Belgium, and France added another 5 million barrels in booty, and imports from the Soviet Union accounted for 4 million barrels in 1940

and 1.6 million barrels in the first half of 1941. Yet a High Command study in May of 1941 noted that with monthly military requirements for 7.25 million barrels and imports and home production of only 5.35 million barrels, German stocks would be exhausted by August 1941. The 26 percent shortfall could only be made up with petroleum from Russia. The need to provide the lacking 1.9 million barrels per month and the urgency to gain possession of the Russian oil fields in the Caucasus mountains, together with Ukrainian grain and Donets coal, were thus prime elements in the German decision to invade the Soviet Union in June 1941.[3]

The smallest of the Russian oil fields at Maikop was captured in August 1942, and it was expected that the two remaining fields and refineries in Grozny and Baku also would fall into German hands. Had the German forces been able to capture these fields and hold them, Germany's petroleum worries would have been over. Prior to the Russian campaign, Maikop produced 19 million barrels annually, Grozny 32 million barrels, and Baku 170 million barrels.[4]

Grozny and Baku, however, were never captured, and only Maikop yielded to German exploitation. As was the case in all areas of Russian production, the retreating forces had done a thorough job of destroying or dismantling the usable installations; consequently, the Germans had to start from scratch. In view of past experience with this type of Russian policy, such destruction was expected, and Field Marshal Hermann Göring's staff had begun making the necessary preparations in advance. But a shortage of transport that was competing with military requirements, a shortage of drill equipment as well as drillers, and the absence of refining capacity at Maikop created such difficulties that when the German forces were compelled to withdraw from Maikop in January 1943 in order to avoid being cut off after the fall of Stalingrad, Germany had failed to obtain a single drop of Caucasian oil. Never-

theless, the Germans were able to extract about 4.7 million barrels from the Soviet Union, a quantity that they would have received anyway under the provisions of the friendship treaty of 1939.[5]

Even before the Russian prospects had come to naught, Romania had developed into Germany's chief overland supplier of oil. From 2.8 million barrels in 1938, Romania's exports to Germany increased to 13 million barrels by 1941,[6] a level that was essentially maintained through 1942 and 1943.[7] Although the exports were almost half of Romania's total production, they were considerably less than the Germans expected. One reason for the shortfall was that the Romanian fields were being depleted. There were other reasons as well why the Romanians failed to increase their shipments. Foremost among these was Germany's inability to make all of its promised deliveries of coal and other products to Romania. Furthermore, although Romania was allied with Germany, the Romanians wished to husband their country's most valuable resources.[8] Finally, the air raids on the Ploesti oil fields and refineries in August 1943 destroyed 50 percent of the Romanian refinery capacity. Aerial mining of the Danube River constituted an additional serious transportation impediment. Even so, Romanian deliveries amounted to 7 million barrels in the first half of 1944 and were not halted until additional raids on Ploesti had been flown in the late spring and summer of 1944.[9]

Even with the addition of the Romanian deliveries, overland oil imports after 1939 could not make up for the loss of overseas shipments. In order to become less dependent on outside sources, the Germans undertook a sizable expansion program of their own meager domestic oil pumping. Before the annexation of Austria in 1938, oil fields in Germany were concentrated in northwestern Germany. After 1938, the Austrian oil fields were available also, and the expansion of crude oil output was chiefly effected there. Primarily as a result

of this expansion, Germany's domestic output of crude oil increased from approximately 3.8 million barrels in 1938 to almost 12 million barrels in 1944.[10] Yet the production of domestic crude oil never equaled in any way the levels attained by Germany's other major supplier of oil, the synthetic fuel plants.

Inasmuch as natural oil deposits in Germany were so few, long before the war efforts had been made to discover synthetic methods of producing gasoline and oil. In view of the country's wealth of coal, it was logical to look in this direction for a solution. Both coal and petroleum are mixtures of hydrocarbons, and the problem was how best and most efficiently to isolate these elements from the coal and transmute them into oil. By the time Hitler became chancellor in 1933, four methods of achieving this were either available or in early stages of perfection.

The first process produced benzol, a by-product of coking. Benzol was used as a fuel in admixture with gasoline. The drawback to increased production of benzol was the fact that it was tied to the quantities of coke that were needed at any given time, and these in turn were determined by the production limits of crude iron.

The second method produced a distillate from lignite coal. Brown or soft coal was gently heated, and the tars and oil were then extracted and distilled into fuel. The end product was of such low quality, however, that only 10 percent could be used as gasoline, with the remaining 90 percent useful only as heating oil and diesel fuel.

A third formula, the Fischer-Tropsch process, was, at that time, still in the research and testing stage. Under this system, coal is compressed into gas which is mixed with hydrogen. By placing this mixture in contact ovens and adding certain catalysts, oil molecules are formed. Further treatment of this primary substance generates fuel, chiefly diesel oil.
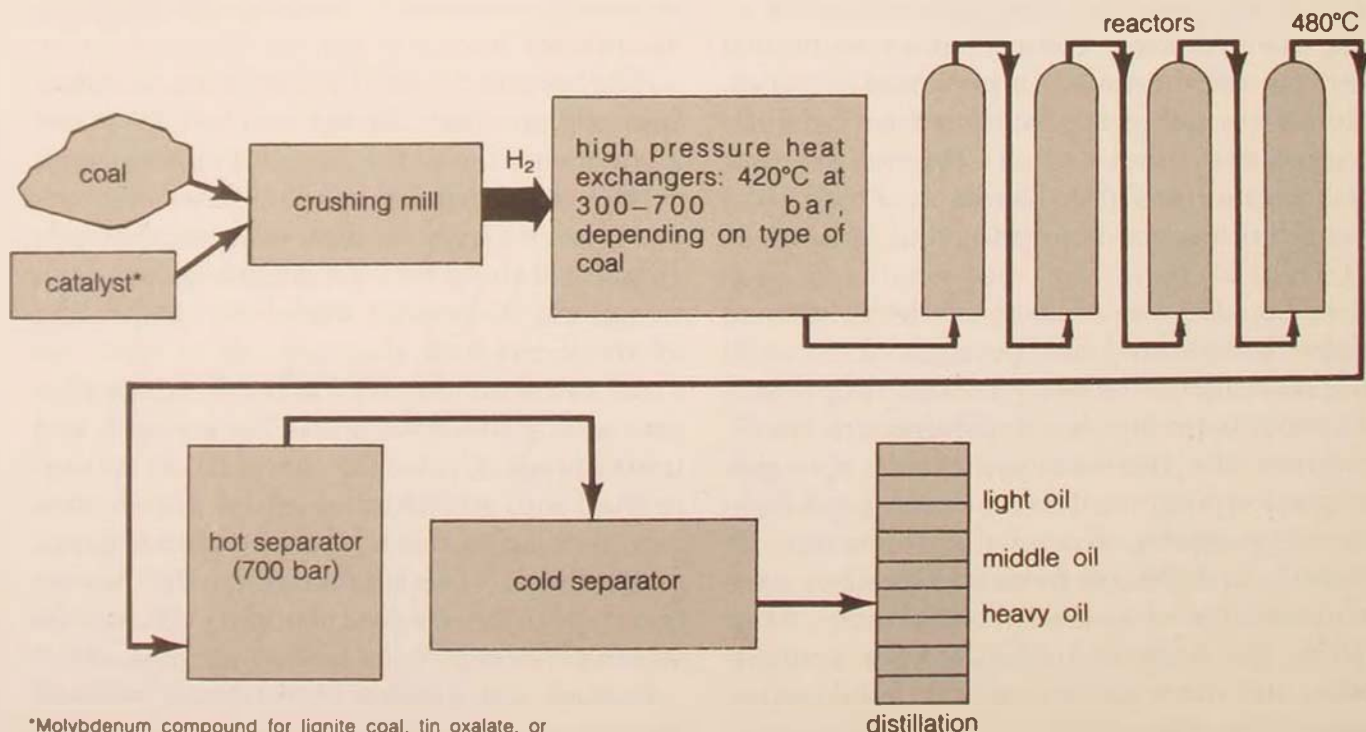
Coking and distillation extracted oils and tars from coal, and additional cracking refined

them into gasoline. The Fischer-Tropsch process and a fourth method, the hydrogenation process, changed coal directly into gasoline. As coal is a hydrocarbon containing little hydrogen and gasoline is a hydrocarbon with a high hydrogen content, the problem consisted of attaching hydrogen molecules to coal, thereby liquefying it. This was the basis of the hydrogenation process, which required high temperatures and high pressures. By 1933, this method had been thoroughly tested and was ready for large-scale practical application. The advantage of the hydrogenation method was that as primary material it could use the tars from the distillation of both lignite and bituminous coal (although the distillation of the latter was not possible on a large scale until 1943) as well as lignite and bituminous coal directly.[11]

When the Germans in the 1920s first began considering other sources of fuel, they did so for three reasons. First, the blockade during World War I had taught them how dependent they were on imports of a myriad of essential raw materials and how vulnerable this dependence made them. Second, because of the lost war and the ensuing economic difficulties, Germany was short of hard foreign exchange required for the purchase of foreign oil. And third, rumors were rampant in the world that proven reserves were about to run out. This last worry disappeared with new finds, but the second motive in particular, shortage of foreign exchange, remained and grew under Hitler. It was also Hitler's determination to make Germany independent from outside sources.[12] Furthermore, Germany's leadership increasingly was concerned with the requirements of a war economy, and after 1938 these concerns occupied a substantial position. Prior to this time, five hydrogenation plants had been constructed, one of which was based on bituminous coal treatment. This plant, Scholven, was located in the Ruhr area; the other four

The hydrogenation process simplified

reactors   480°C

coal

catalyst*

crushing mill

H_2

high pressure heat exchangers: 420°C at 300–700 bar, depending on type of coal

hot separator (700 bar)

cold separator

light oil

middle oil

heavy oil

*Molybdenum compound for lignite coal, tin oxalate, or ammonium chloride for bituminous coal

distillation

plants at Leuna, Böhlen, Magdeburg, and Zeitz were located in central Germany, adjacent to lignite deposits. The total output of the plants in 1937 was 4.8 million barrels of various grades of petroleum fuels.[13]

In October 1936, the first of several plans for increased oil production was formulated. It envisioned a production of 36 million barrels of petroleum fuels by October 1938.[14] The plan was twice revised, in May and again in December 1937, but the changes did not involve an increase in projected production. They were concerned chiefly with changes in the output mix, allowing for a hefty quantity of aviation fuel, with other types of fuel being reduced.[15]

To accommodate this increased production, the plants at Scholven and Zeitz were to be expanded, and four new hydrogenation plants were to be erected at Gelsenkirchen, Welheim, and Wesseling in the Ruhr and at Pölitz near Stettin on the Baltic Sea. The scheduled construction time for these projects was 18 months, a goal that turned out to be rather unrealistic. Even more unrealistic were the completion dates assigned to twelve Fischer-Tropsch plants with relatively low production goals; they were to be finished by 1 April 1938. By 1945 only nine of them were operational; they reached their maximum capacity in 1943 with less than 2.8 million barrels.[16]

Production goals were altered again in the summer of 1938 when Göring set up a new program whose completion was to coincide with the completion of rearmament in 1942-43, in keeping with the plans revealed by Hitler in his November 1937 conference. Greater armaments required larger amounts of fuel, and the so-called Revised Economic Production Plan of 1938 reflected the new needs. Göring called for the production in 1942-43 of almost 88 million barrels of various types of fuels and lubricants. But it was not long before it was realized that a program of such dimensions would require construction steel quantities that simply were not available in an already straitened economy. After several further revisions,

the final one of January 1939 called for a production in 1943 of 68 million barrels. The quantities for all fuels were reduced except aviation gasoline, which was to be produced at 100 percent of the amounts provided in Göring's plan of 1938.[17]

It was aviation gasoline that played the crucial role in the hydrogenation plant construction program. By the early 1930s, automobile gasoline had an octane reading of 40 and aviation gasoline of 75-80. Aviation gasoline with such high octane numbers could only be refined through a process of distillation of high-grade petroleum. Germany's domestic oil was not of this quality. Only the lead additive tetraethyl could raise the octane to a maximum of 87. The license for the production of this additive was acquired in 1935 from the American holder of the patents, but without high-grade oil even this additive was not very effective.

Hydrogenation promised a way out. It allowed a gasoline with an octane reading of 60 to 72, and thus high antiknock properties, to be manufactured. With the aid of lead tetraethyl, the octane reading could be raised to 87. High octane gasoline was important, as its antiknock characteristics determined the compression ratio of an engine that used the fuel, and the compression ratio in turn determined the engine's power.[18]

A breakthrough in gasoline production occurred in the United States in 1935 when it became technically possible to produce isooctane with a reading of 100 in large quantities. By 1939, both the American and English air forces had begun to use the improved gasoline, and their planes could then be equipped with correspondingly stronger engines. In Germany, also, a method had been discovered to manufacture such a high-test gasoline, but the process was much more complex, cumbersome, and expensive than the American method, which used different primary materials. Due to these difficulties in production, the Luftwaffe until the end of 1938 neglected to insist on the production of high-octane fuel.

For this reason until 1945 the German Air Force had no fuel equal to that available in the English-speaking countries.[19]

How important the new aviation fuel was is demonstrated by the improved performance it made possible: 15 percent higher speed, a 1500-mile longer range for bombers, and an increased altitude of 10,000 feet. Göring attempted to make amends for the past neglect at the end of 1938 when he demanded that the 19 million barrels of aviation fuel included in the Revised Economic Production Plan be manufactured as high-test gasoline equivalent to the quality of isooctane.[20]

As it was, only two small test plants were in operation when the war broke out in 1939 with a total production of 63,000 barrels per year. The shortage of both steel and manpower had delayed the completion of the full construction program of hydrogenation plants. At the beginning of the war, seven plants were in operation, three were in advanced stages of construction, and two others were barely begun. With the exception of four plants for the production of high-octane aviation fuel, no other plants were established after September 1939.[21]

Even the completion of the plants under construction was not pushed as much as might have been possible. The delay resulted from the competition for essential raw materials, many of which needed to be channeled directly into armaments, and the optimistic forecasts by the High Command. With respect to the first reason, Germany's armaments blanket was simply too thin when the war broke out and instead of broadening Germany's armaments base it became necessary to supply the existing plants so that they could produce arms at an optimal rate.[22] The second reason was based on Germany's initial successes in the war. Estimated requirements for warfare proved to be highly inflated, and the booty acquired from the conquered countries caused stockpiles to be accumulated which, barring unforeseen circumstances, were regarded by the Armed Forces Economic Office as satisfactory through 1941.[23]

But the operations in Soviet Russia in 1941 and 1942 reduced stockpiles radically, and after the summer of 1942 the German armed forces and the German economy had to draw almost solely from direct production.[24]

When it was suggested that one of the meetings of the Central Planning Board be devoted to the fuel situation, Albert Speer cut the discussion short by stating: "We need only a very limited briefing. We know how bad the situation is."[25] In fact, Speer was partially responsible for the grave fuel situation; soon after his appointment in February 1942 he had curtailed the overall construction program, including that of the hydrogenation plants. It seemed to him that because of the raw material shortages it was not practical to build plants that would be in operation only several years hence. Immediate needs had priority. Only toward the end of 1943 was an effort made once more to force the expansion of hydrogenation plants.[26]

Still, between 1938 and 1943, synthetic fuel output underwent a respectable growth from 10 million barrels to 36 million. The percentage of synthetic fuels compared to the yield from all sources grew from 22 percent to more than 50 percent by 1943. The total oil supplies available from all sources for the same period rose from 45 million barrels in 1938 to 71 million barrels in 1943.[27]

In spite of shortages and other difficulties, production and supply, although never reaching the amounts contemplated by Göring, presented no serious problems until the spring of 1944.[28] This was accomplished by giving no claimant, including the armed forces, all of the fuel that he needed. A good example is the ruthless reduction in the allocation for civilian passenger cars. The only people permitted to operate a motor vehicle were doctors, midwives, policemen, and high government and party officials. Their total allocation was only 450,000 barrels per year. German agriculture was allotted 1.7 million barrels of fuel per year for 1941 and 1942. The farmers actually required more fuel in 1942 than in 1941 because so

many horses had been requisitioned for the armed forces that it was necessary to operate more tractors.

In the spring of 1942, the Agency for Generators was established to effectuate the conversion of vehicles from liquid to solid fuels.[29] A conversion to such fuels as wood chips, anthracite coal, lignite coal, coke, gas, and peat moss was expected to yield substantial savings in gasoline. During 1942, the saving amounted to 5 million barrels, and in 1943 it reached 8.2 million barrels.[30] Thousands of cars and trucks were converted and equipped with devices shaped like water heaters, which graced trunks and truck beds.

Yet however great the savings were, they were insufficient in themselves to alter the perennial fuel shortage. In the autumn of 1942 there appeared to be only two ways in which fuel production could be enlarged. One was to secure the Russian oil fields, but as we have seen that expectation quickly evaporated; the other was to increase the number and output of hydrogenation plants. Such a plan was devised late in 1942, projecting an annual production of synthetic fuel of 60 million barrels by 1946.[31] Yet when the effort was finally made toward the end of 1943, it was decidedly too late for any improvements. The onset of Allied air attacks on the hydrogenation plants in May 1944 foiled all expectations and sounded the death knell for the German war machine.

The first massive raid was flown on 12 May 1944 and directed against five plants. Other raids followed successively and continued into the spring of 1945. The severity of the raids was immediately recognized by the Germans. Between 30 June 1944 and 19 January 1945, Albert Speer directed five memoranda to Hitler which left no doubt about the increasingly serious situation. Speer pointed out that the attacks in May and June had reduced the output of aviation fuel by 90 percent. It would require six to eight weeks to make minimal repairs to resume production, but unless the refineries were protected by all possible means, coverage

of the most urgent requirements of the armed forces could no longer be assured. An unbridgeable gap would be opened that must perforce have tragic consequences.[32] Continued attacks also negatively influenced the output of automotive gasoline, diesel fuel, Buna, and methanol, the last an essential ingredient in the production of powder and explosives. If, Speer warned, the attacks were sustained, production would sink further, the last remaining reserve stocks would be consumed, and the essential materials for the prosecution of a modern technological war would be lacking in the most important areas.[33]

In his final report, Speer noted that the undisturbed repair and operation of the plants were essential prerequisites for further supply, but the experience of recent months had shown that this was impossible under existing conditions.[34] Behind Speer's warnings was his awareness that once production of fuels was substantially curtailed, once reserves and the fuel in the distribution system were depleted, the Germans would be finished and the end could be predicted with almost mathematical accuracy.[35] In a way, Speer was merely echoing the prophetic utterance of Field Marshal Erhard Milch from the summer of 1943:

> The hydrogenation plants are our most vulnerable spots; with them stands and falls our entire ability to wage war. Not only will planes no longer fly, but tanks and submarines also will stop running if the hydrogenation plants should actually be attacked.[36]

A perfect example of this was the amount of aviation fuel allotted to the training of pilots. Toward the last nine months of the war, they were sent into combat with only one-third of the training hours actually required.[37]

WHAT was left of the hydrogenation plants after the war barely survived for a few more years, if only for the mundane purpose of refining imported crude oil. By 1964, the oil boom in full swing, the plants

ceased to be competitive. The technological lead once enjoyed by Germany was assumed by South Africa. Determined not to be at the mercy of unfriendly oil-producing states, the South African government decided to rely on conversion of coal to gasoline. In April 1980 the Republic of South Africa began to operate the second of three Fischer-Tropsch plants. They are the largest and only commercial oil-from-coal refineries in the world, and by 1985 they will supply half of the country's fuel needs.[38]

The Germans also are back in the game. A pilot plant for the liquefaction of coal is being constructed in the Ruhr, and on becoming operational in the spring of 1981 it will have a capacity for converting 75,000 tons of coal annually into 157,000 barrels of light and medium oil and liquid gas. Early in 1980 the West German government approved an ambitious program involving the construction of 14 large plants for the liquefaction and gasification of coal, requiring the investment of $7 billion by 1993. By 1986 the Germans expect to satisfy 10 percent of their current gasoline needs in this fashion.[39]

This, of course, is a hopeful sign for the United States. With respect to foreign exchange, dependence on others, and more than adequate coal deposits at home, there exist some remarkable similarities between the United States today and the Germany of the 1930s and 1940s when it comes to synthetic fuel production.

It was the dearth of foreign exchange after World War I that motivated the Germans to search for alternative supplies of fuels; the current annual expenditure by the United States of $90 billion which alone creates our gigantic balance-of-payments deficit is a parallel phenomenon. While the dollar is still recognized and accepted as a principal currency—unlike the German mark after 1918—our huge payments for imported petroleum constitute a devastating hemorrhage of national substance, glut the foreign money markets with increasingly

devalued dollars, and create inflation at home and indebtedness overseas. Just as Germany then and now was dependent on outside sources for its supply of liquid energy, so the United States today is forced to rely on foreign suppliers for approximately half its fuel needs. This dependence jeopardizes America's ability to act free from intimidation and circumscription in matters of foreign policy. Economically, the latitude of OPEC to raise oil prices at will has immediate and, in the long run, intolerable implications for this country.

However, the vast coal deposits in the United States afford this country an incomparably better opportunity to become largely energy-independent than Germany with its coal beds had in the 1930s and 1940s or even now. In contrast to this country, Germany's coal reserves are virtually depleted, and what is left is difficult and costly to extract. The price of a ton of coal in Germany currently is $100, compared to $25 per ton in the United States.[40]

Different methods need to be applied in producing synthetic fuels, depending on the type of raw material used and the end-product desired. Whatever scientific-technical approach will ultimately be deemed preferable, there is no doubt that from a purely technological point of view this country can assure itself of adequate supplies of fuel in relatively short order.[41] The actual problem is not one of technology so much as one of political responsibility, courage, will, and wisdom on the part of the administration and the United States Congress. The approval of a $20 billion synthetic fuel program by the United States Congress is a first, cautious step in the right direction. Anyone who might be appalled at the sums which need to be invested—the $20 billion is only part of a total of $88 billion to be expended for this purpose—need only remind himself, however, that at the present time we spend more than that total amount every year for imported petroleum.

A word of caution, though. The magnitude of the problem facing this country has another

dimension that should not be underestimated. At the peak of their synthetic fuel production in 1943, when half of their economy and their armed forces ran on synthetic fuel, the Germans produced 36,212,400 barrels of fuel a year. At current rates of imported fuel alone, that quantity in this country would last all of four and one-half days!

University of South Carolina

Notes

1. United States Strategic Bombing Survey, *The Effects of Strategic Bombing on the German War Economy* (Washington, 1945), p. 73. Hereafter cited as USSBS.

2. Ibid., pp. 73-74.

3. W. Tomberg, "Wehrwirtschaftliche Erkenntnisse von 5 Kriegsjahren," (November 1944), pp. 58, 61; see also Speer's remarks in Imperial War Museum, FDC 1, Interrogation of Albert Speer, 5th Session, May 30, 1945, p. 3.

4. Remarks by Professor Hettlage, economic adviser to Speer, on the condition of the war economy, November 7, 1942.

5. Dieter Petzina, *Autarkiepolitik im Dritten Reich: Der nationalsozialistische Vierjahresplan* (Stuttgart, 1968), pp. 143-44.

6. USSBS, p. 74.

7. Zentrale Planung, 20th Meeting, October 29, 1942, pp. 15, 17; Tomberg, p. 59.

8. Zentrale Planung, 37th Meeting, April 22, 1943, p. 45.

9. USSBS, p. 75.

10. Wolfgang Birkenfeld, *Der synthetische Treibstoff 1933-1945* (Göttingen, 1964), p. 217. It is interesting to note that without Austria, West Germany's crude oil production after a brief hiatus in 1945 and 1946 began to rise again in 1947 and by 1959 had reached 32 million barrels, a figure which doubtless would have appeared astronomical to Hitler and Speer.

11. Ibid., pp. 12-16.

12. Petzina, p. 36.

13. Birkenfeld, p. 225.

14. Ibid., p. 82.

15. Ibid., p. 230.

16. Ibid., pp. 197-210.

17. Ibid., pp. 113-14, 120-25, 231.

18. Ibid., pp. 60-64.

19. Ibid., pp. 70-74.

20. Ibid., pp. 121-25.

21. Ibid., pp. 138-40.

22. Aide-memoire by General Georg Thomas, July 6, 1942.

23. Georg Thomas, *Geschichte der deutschen Wehr- und Rüstungswirtschaft (1918-1943/45)*, edited by Wolfgang Birkenfeld, Schriften des Bundesarchivs, Nr. 14 (Boppard am Rhein, 1966), pp. 179, 250, 253.

24. Birkenfeld, *Treibstoff*, p. 156.

25. Zentrale Planung, 20th Meeting, October 29, 1942, p. 8.

26. Zentrale Planung, Ergebnisse der 56. Sitzung der Zentralen Planung, April 5, 1944, p. 3.

27. USSBS, p. 74.

28. Tomberg, p. 61.

29. Zentrale Planung, 20th Meeting, October 29, 1942, pp. 10-14.

30. Ibid., pp. 17-18.

31. Ibid., p. 51.

32. Albert Speer, "Erste Hydrier-Denkschrift vom 30. Juni 1944."

33. Albert Speer, "Dritte Hydrier-Denkschrift vom 30. August 1944.

34. Albert Speer, "Fünfte Hydrier-Denkschrift vom 19. Januar 1945."

35. Imperial War Museum, FDC 1, Report 26, Interrogation of Albert Speer; The Effects of the Allied Bombing of Germany, July 18, 1945.

36. Zentrale Planung, 37th Meeting, April 22, 1943, p. 42.

37. USSBS, *Over-all Report (European War)*, Washington, September 30, 1945, p. 21.

38. *Der Spiegel*, March 17, 1980, pp. 169-72.

39. *Chicago Tribune*, April 21, 1980, Section 5, p. 7.

40. Ibid.

41. A team of scholars at Texas A&M University is currently studying the surviving records of the German synthetic fuel processes with a view toward determining which aspects can be utilized for American purposes.

Author's note: All documents come from the German Federal Archives, Koblenz, with the exception of those labeled Imperial War Museum (IWM), London.
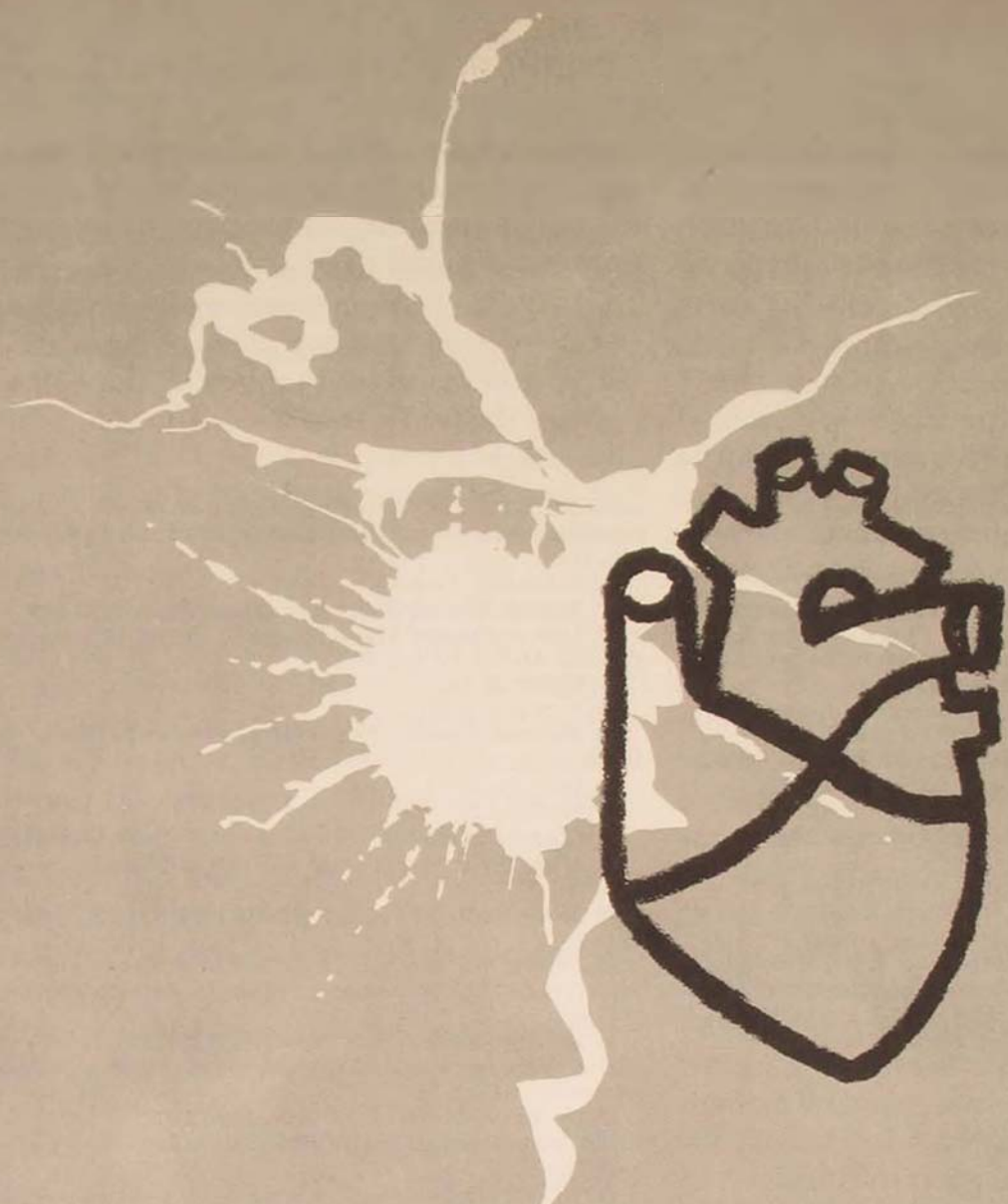
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CHIEF MASTER SERGEANT
MARK H. TOPPER

A whole new kind of spontaneous action is taking place here, and we know neither its laws nor its ends.

Jacques Ellul
The Technological Society

It is time that we seriously asked whether we are not in danger of drowning in the new sea of man made waves.

C. Maxwell Cade
New Scientist

FOUR hundred years before the birth of Christ, Plato suggested that "all diseases of the body proceed from the mind or soul." Some 2000 years later he proved to be remarkably accurate. Contemporary experts believe that the mind is directly responsible

for as much as ninety percent of all illness and disease.[1] Why it took so long to verify Plato's observation seems obvious. The vast majority of human experience consisted of living in a world where survival was a constant, daily challenge. Questions raised by Plato and others were peripheral to this daily struggle for survival and therefore best left to the philosophers. Today we know better. Diseases produced by the mind can no longer be left to intellectual discussions. They are no longer a peripheral issue. They affect all of us everyday.

About forty years ago, Dr. Hans Selye, a Canadian biologist, identified the cause of these mentally produced illnesses. He called it stress. More recent research has validated Selye's finding and expanded upon it. What is significant in the recent findings is the fact that all of us, whether we suffer personally from the effects of stress or not, pay for it. No longer can stress be considered a personal problem. Consider the following: in 1976, stress surpassed the common cold as America's most prevalent health problem.[2] It is the number one cause of heart disease and has been directly related to such other maladies as hypertension, mental depression, migraine headaches, fever, colitis, fatigue, ulcers, allergies, excess clotting of the blood, and, most recently, cancer.[3]

The impact of all of this on the price we pay in terms of personal health and health care is obvious. Furthermore, stress affects the price we pay for consumer goods: estimates of the total cost of stress-related problems to industry have been placed in excess of $100 billion a year.[4] Bethlehem Steel has reported that the cost of health insurance alone is a greater share of an automobile's cost than steel,[5] but the costs don't stop there. Stress also affects the amount of taxes we pay; for the government is paying more and more of the nation's health care costs. In 1950, the government share of the cost was 27 percent; by 1974, that figure had jumped to 40 percent of a much larger total.[6]

On the surface, the solution seems clear. Reduce stress and productivity will increase, while corollary costs will decrease. Unfortunately, the problem isn't that simple. Stress is a necessary part of life, and its absence is in itself a kind of stress. Too little, as well as too much stress, can cause at worst death and at best decreased performance. Research supports this point. Behavioral scientists have found a link between stress, performance, and motivation.

> *Every sweet has its sour; every evil its good.*
>
> Ralph Waldo Emerson
> "Compensation"

Research into the question of stress and performance concluded that there is an inverted U-shaped relationship between stress and job performance. (See Figure 1.)

If there is no motivation to perform a job, no possible reward for performing the job well, or no ambition on the individual's part, minimum effort will be expended. However, as the motivation level increases, the level of

Figure 1. Relationship between stress and job performance
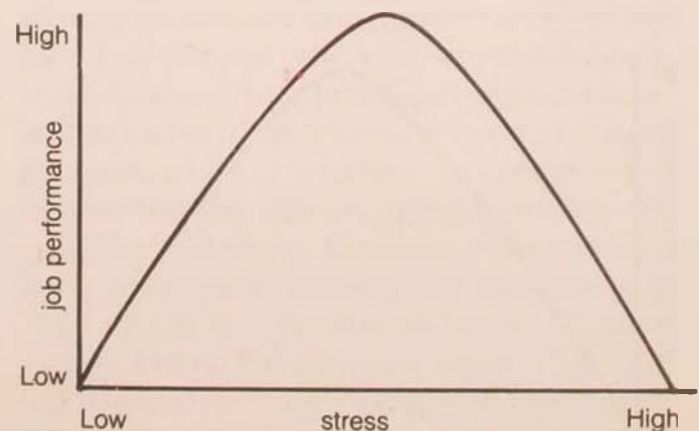
stress rises along with productivity and efficiency. The right amount of stress can turn a person on; it can lead to creativity, interest, and optimal performance. However, if the individual becomes too achievement oriented or too much turned on or if the demands and pressures of the job are too unrealistic and unreasonable, performance will again decline, for too much stress will sap a person's health and mental ability.[7] The significance of this to managers and supervisors is clear. We tend to overload the capable workers and underload the others. This is a natural tendency, but only recently have its results become known. The expression "You can ride a good horse to death," unfortunately, is more than just an expression.

Also significant in this regard is the explicit link between stress and motivation. A striking similarity exists between the inverted U-shaped model and the McClelland-Atkinson model on the relationship of motivation to probability of success. (See Figure 2.)

McClelland and Atkinson demonstrated that an individual is most highly motivated when the ultimate determination of success is the perception or estimate of a person's own ability. As Figure 2 suggests, people are not usually highly motivated if the task is perceived as being too easy or too difficult. If a task is
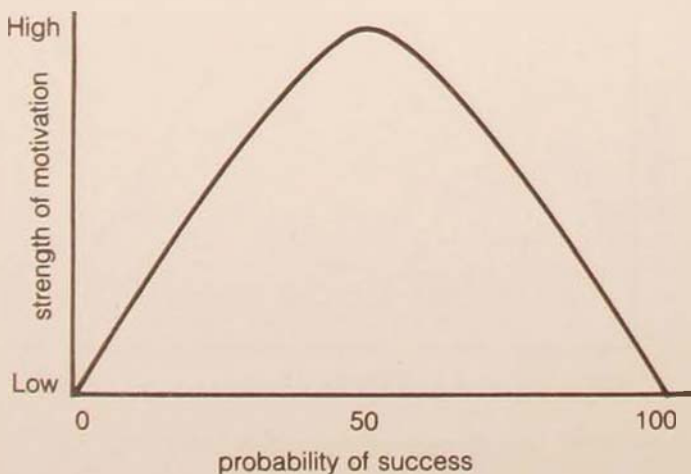
perceived as too easy, not enough stress is produced because motivation is low. Conversely, if the task assigned is perceived as too difficult to accomplish, performance also suffers, for the excess stress involved in attempting to satisfy unrealistic objectives drains a person's health and vigor.[8] Obviously, a balance must be found between underload and overload if peak health and performance are to be maintained. This balance must be determined individually, not collectively, by the supervisor.

Although there are no easy solutions, there are behavioral patterns, skills, and attitudes that can be developed and used to deal with stress. To appreciate and accept these behaviors, skills, and attitudes, we must first look at what stress is and how it affects the body.

As we have seen countless times . . ."adapt or perish" is a fundamental law of nature.

Richard Carrington
A Million Years of Man

Most people have a similar idea of what stress is when they discuss it: tension, anxiety, and pressure. Despite this, finding a definition for stress that would meet with general agreement has not been possible because no two groups view stress in exactly the same way. To doctors, stress is a medical problem; to counselors, an emotional problem; and to managers, a management problem. However, research does point to two common threads of agreement. First, despite the fact that the body's exclusive reaction to stress was designed to ensure survival in a life-or-death situation, the dangers in the environment now tend to be most often associated with nonviolent threats. Today, man-made, social threats are the most stressful.[9] Second, social stress seems to be initiated by an intellectual rather than emotional activity. It is the individual's interpretation of an event that makes it stressful. Only when the mind perceives an event as threatening do the emotions signal the body to react physiologically.[10]

Figure 2. Relationship of motivation
to probability of success

Dr. Barbara Brown of the UCLA Medical Center has defined stress in relation to these two common, psychologically based threads. According to Brown, stress is "a perception of the social environment that constitutes a threat to our social well-being."[11] These social threats range from competition for mates and jobs to loss of esteem or social standing to a fear of failing. Brown describes the two intellectual activities that determine whether an event is stressful as "expectation" and "perception." Past experience dictates our expectations regarding an event. The event is then perceived in relation to expectations. If the two match, the situation is not stressful; if they do not match, we react by worrying.[12]

Worrying is basically a problem-solving activity.[13] There are two types of worrying: productive and nonproductive. Productive worrying includes coping, understanding, rationalizing, or living with the differences. Conversely, nonproductive worrying is frustrated worrying, which leads to rumination (the act of meditating). Ruminating creates mental images of the events that led to the stressful situation. These images then continue to activate the physiological reaction to stress, which recreates the stress again and again. It appears as if these mental images are the most important consequences of stress.[14] What causes nonproductive worrying? Dr. Gerald Piaget attributes it to what he calls "the try harder fallacy." In novel situations we use old solutions; if the old strategy doesn't work, we try harder.[15]

It would appear that adaptability and flexibility are two personal characteristics necessary to mitigate stressful situations. Dr. Paul Rosch, President of the American Institute of Stress, says it this way: "It's not stress so much but the individual's ability to adapt to or cope with it that appears to be important in the production of disease states."[16] This opinion is further supported by Dr. Robert J. Samp of the University of Wisconsin. In a study of 200 Americans who lived longer than average, he found that all of them tended to share a common characteristic: they adapted to life's changes.[17] Perhaps this point is summed up best by the American theologian, educator, and author Reinhold Niebuhr, who wrote: "God grant me the serenity to accept the things I cannot change; courage to change the things I can; and wisdom to know the difference."[18]

> *The indisputable fact that we do not, and perhaps cannot, recognize our own voice indicates how incurably strange we are to ourselves.*
>
> Eric Hoffer
> *Reflections on the Human Condition*

Although all definitions of stress have been challenged, most researchers do agree on how stress affects the body. Simply, the body has only one way of responding to stress. Regardless of whether the stressor is someone with a gun threatening our life or a reprimand from our boss, the body always responds the same way.[19] Dr. Walter Cannon of Harvard coined the phrase "fight or flight pattern" to describe the body's exclusive reaction.[20]

Immediately on perceiving an event as stressful, the brain reacts by stimulating the hypothalamus to control involuntary muscles and organs. Concurrently, the hypothalamus signals the pituitary glands to send a hormone (ACTH) to the adrenal glands. This injection signals the adrenals to manufacture two chemicals necessary to deal with stress: adrenalin and cortisone. Adrenalin functions as a stimulant to increase the heart rate and raise blood pressure, which in turn increases perspiration and affects the salivary glands, causing the mouth to become dry. Cortisone rushes through the bloodstream, sending out substances to fight infection. The muscles begin to tighten in preparation for absorbing blows. The stomach suspends activity. Undigested food begins to ferment, causing excess acid, indigestion, heartburn, and eventually ulcers. The spleen releases more red blood corpuscles, which en-

ables the blood to clot more quickly. Additional white blood corpuscles are produced in the bone marrow to help fight infection. Oxygen-carrying red blood cells consume food to produce energy. To provide additional energy, the adrenals increase the amount of fat and cholesterol in the blood, and the liver is directed to increase the amount of sugar. The body is now prepared to meet a physical threat.[21]

This physiological reaction evolved over millions of years and was well suited to our Stone Age ancestors. It allowed them to reach peak efficiency quickly, prepared either to stand and fight or to run, depending on their perception of the odds. Regardless of the outcome of their decision, immediate action was taken that automatically dissipated the physiological buildup. Unfortunately, contemporary society frowns on both killing a competitor and running away in disgrace. This single factor has caused stress to become a significant contemporary problem. Without a release for the psychologically induced fight-or-flight pattern, stress continues to build up until the body's system is pushed to the limit. The system then begins to break down.

Dr. Hans Selye, the discoverer of the stress phenomenon, has been particularly interested in this aspect. His research led him to develop the concept he calls "the general adaption syndrome." The syndrome has three phases: alarm reaction, stage of resistance, and stage of exhaustion. (See Figure 3.) The alarm reaction occurs when stress is first perceived. Initially, the body's resistance is lowered as the body begins to adapt. The stage of resistance begins if the continued exposure to the stressor is compatible with the adaptation that occurs during the first phase. During phase two the body's resistance rises above normal. If the body has a long and continuous exposure to the same stressor, eventually the adaptive energy becomes exhausted. The symptoms of the alarm reaction reappear, except now they become irreversible, and death follows.[22]

It follows from Selye's research that it is

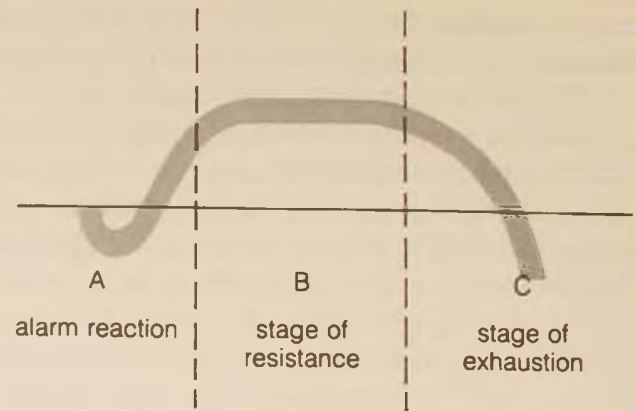| A	B	C
alarm reaction	stage of resistance	stage of exhaustion

Figure 3. The three phases of Selye's general adaption syndrome

important to develop a sensitivity to the physical and emotional reactions to stress by recognizing the symptoms that precede the exhaustion stage. Stress manifests itself in several ways: anxiety, irritability, heavy drinking, restlessness, and difficulty sleeping, concentrating, and making decisions. Emotional states tend to display themselves in bodily reactions, such as headaches, an increase in the heart rate, backaches, knots in the stomach, or indigestion. The physical ailments are usually much easier to identify than the emotional ones; however, both are warning signals that there is an imbalance in the system. During times of imbalance it is easiest to identify the situations that caused the imbalance and take corrective action. Conversely, constantly ignoring these symptoms will eventually, as Selye notes, lead to a breakdown of the entire system.[23]

From his point of view as a biologist, Selye described stress as ". . . the nonspecific response of the body to demands placed upon it."[24] What is meant by nonspecific is that even though all causes of stress are specific (e.g., a reprimand from the boss, a fight with a spouse), and all the results from these causes are specific too (e.g., ulcers, headaches, heart attacks, etc.), no specific cause leads to a specific event. Even though all parts of the body are equally

exposed to stress, the weakest part will suffer first. What this weakest part is depends on such factors as age, genetic predisposition, sociocultural environment, and individual behavior patterns.[25]

Although stress affects everyone, managers, by the very nature of their jobs, tend to face more stressful situations than the rest of the working population.[26] In fact, an executive stress organization, after analyzing a major U.S. corporation's top managers, found that 21 of the company's 22-man executive committee were suffering from some serious, stress-related illness.[27] Also, research indicates that individuals reaching the management levels of their organizations tend to display behavioral patterns closely associated with a vulnerability toward stress. The seminal work in this area was done by cardiologists Meyer Friedman and Ray Rosenman.

> *In the absence of Type A Behavior Pattern, coronary heart disease almost never occurs before seventy years of age, regardless of the fatty foods eaten, the cigarettes smoked, or the lack of exercise. But when this behavior pattern is present, coronary heart disease can easily erupt in one's thirties or forties.*
>
> Meyer Friedman, M.D.
> Ray Rosenman, M.D.
>
> *Type A Behavior and Your Heart*

Doctors Friedman and Rosenman have found that certain behavioral patterns relate very closely to a vulnerability toward stress-related illness in general and heart disease in particular, while other patterns tend to be more resistant. Friedman and Rosenman have referred to these personalities as Type A and Type B, respectively.[28]

The Type A personality is the most stress-prone. The more common characteristics of Type A people are excessive competitive drive, impatience, and a significant sense of urgency and time. They tend to try to accomplish too

much or become involved in too many activities. To compensate, they try to put more and more into less and less time. Type A people do this in a number of ways. The two most common are to create suspenses for themselves if none exist and to use quantity rather than quality as their measure of success. For many, their drive puts them on the edge of habitual hostility. They normally have few sources of diversion outside their work and tend to feel somewhat guilty if they are not working. They bring to their "playtime" the same competitive drive—whether they are playing Monopoly with their children or a game of tennis or golf with friends; they go all out to win. This competitiveness, of course, discounts the benefits of play and relaxation, and makes stress a constant companion.[29]

In contrast, Type B personalities are much more relaxed, easygoing, and free from the habits of a Type A. They are not driven by the clock, are more patient, and feel less hostility. When they play or exercise, they relax and have fun without the need constantly to prove that they are superior.[30]

Compounding the stress difficulties of Type A people is the fact that they are more likely to ruminate than Type Bs. What Piaget refers to as the try harder fallacy, Friedman and Rosenman call stereotyped behavior:

> More and more, again to save time, the Type A subject tends to think and do things in exactly the same way. Consciously or not, the Type A man apparently feels that if he can bring the previously "coded" thought and action processes again to bear on a new task, he can accomplish it *faster.* He more and more substitutes "faster" for "better" or "different" in his way of thinking and doing. In other words, he indulges in stereotyped responses.[31]

At the conclusion of their ten-year study, Friedman and Rosenman found that there was a strong correlation between Type A behavior and coronary heart disease. On the average, Type A men were almost three times more likely to develop coronary heart disease than Type B men.[32] This study supported and com-

plemented an earlier research effort by Dr. Flanders Dunbar at New York's Columbia Presbyterian Medical Center.

In 1943, Dr. Dunbar attempted to draw a relationship between personality traits and various disorders associated with emotional problems. Her study revealed a large number of highly trained managers who had suffered heart attacks. All of these men shared one common characteristic: a compulsive striving to achieve. As Dr. Dunbar stated, "They would rather die than fail."[33]

Significantly, Friedman and Rosenman estimate that more than half of all Americans are Type A and that the frequency of Type A behavior is increasing. They attribute this to the fact that Type A behavior is encouraged and rewarded in American society. After all, the hard-driving, achievement-oriented person is considered the organization's most valuable asset and therefore a likely candidate for promotion to a management position.[34]

Interestingly, after Friedman and Rosenman concluded their study of men, they conducted the same study on women. Again, they found that the prevalence of heart disease was far more frequent in Type A women than in Type B. Although statistically women suffer less heart disease than men, Friedman and Rosenman attribute this to the comparatively small number of Type A women in our society. Historically, American culture has not nurtured or rewarded Type A behavior in women. However, today more and more women are being groomed to enter the business world. Eventually, as Friedman and Rosenman suggest, the women will find themselves with the same frequency of heart disease as men.[35]

There is some historic support for the Friedman and Rosenman assumption regarding women. For example, during the Victorian age when most of the pressures and responsibilities were aimed at women, seven of every ten cases of ulcers belonged to women.[36] Despite this, there is some disagreement. Dr. Tobias W. Brocher, a psychiatrist and mental health seminar director for the Menninger Foundation, thinks differently. He believes that although the next few years will be very stressful for women as they break into previously all-male domains, eventually, as they become established and less isolated, they will be better able to cope with stress than men.[37] Obviously, more research is needed in this area.

Regardless of some areas of disagreement, the Friedman and Rosenman thesis in general is well supported. For example, an American Management Association (AMA) study revealed that Type A managers experienced more stress on all surveyed factors than Type Bs. Significantly, Type A managers stated that they were often confronted with heavy workloads and unrealistic deadlines, while the Type B managers perceived the very same jobs quite differently.[38]

For this reason, managers are encouraged to determine whether they have a Type A personality. Friedman and Rosenman suggest that if there is some doubt, chances are the individuals are Type A—perhaps not fully developed, but enough so that thought should be given to changing. They further advise that when people assess themselves, they should talk to a spouse, relative, or friend who knows them well. They say this is necessary because many Type A people are completely unaware of their Type A behavior patterns. In fact, of every five people who display, beyond doubt, Type A behavior, four will deny or minimize the intensity of their behavior.[39] Therefore, if there is a disagreement, the individuals doing the assessment are probably wrong.[40]

If it is determined that Type A behavior patterns are present, Friedman and Rosenman suggest adopting some of the personality and behavioral patterns of a Type B. The following are some of their suggestions:

• Allow more time for activities than they seem to require.
• Wake up 15 to 20 minutes earlier than usual and spend the time doing almost anything, from taking a walk to reading the paper,

or just taking longer to eat breakfast.

• Develop the habit of listening to people without interrupting.

• Cultivate the habit of smiling at people, even strangers.

• Drop acquaintances who are consistently annoying.

• Frequent restaurants and theaters where delays can be expected.

• Avoid appointments at definite times, if possible.

• Carry a book around and read it when required to wait.

• Verbalize appreciation to workers and others who perform their jobs well.

• Avoid the phrase "I told you so."

• And find time each day to be alone.

Friedman and Rosenman also believe that Type A people are at their worst while driving a car. Their advice is purposely to avoid passing a slower car, even if the chance arises. They suggest levying a penalty each time a slower car is passed. One possibility is to slow down and let the car repass you. Most important, they advise people always to maintain a sense of humor, especially regarding themselves. A sense of humor about ourselves is acknowledgment of the fact that we are imperfect human beings.[41]

Obviously, any attempts at wholesale personality changes are doomed to failure. It is extremely difficult to develop new behavioral patterns that may run counter to impulses and habits that have been developed over a lifetime.[42] Therefore, it may be more effective to begin modestly. Select one of the previously mentioned suggestions and apply it. When it becomes an automatic response, not requiring conscious activity, select another pattern and repeat the process. Although it is desirable to adopt as many Type B behavioral tendencies as possible, it is the total accumulation of the various behaviors and skills that will ultimately move stress to and maintain it at each person's optimal level.

Thus far I have discussed what stress is, how

it affects the body, and the behavioral patterns of stress-prone people. Now, let's turn our attention to the leading causes of stress on the job and what can be done to help us cope.

> I've met a few people in my time who were enthusiastic about hard work. And it was just my luck that all of them happened to be men I was working for at the time.
>
> Bill Gold

> If you make the organization your life, you are defenseless against the inevitable disappointments.
>
> Peter Drucker

In 1979, the American Management Association (AMA) sponsored a research study into the area of executive stress. The objective of the study was to determine managers' perceptions of what they find most stressful on the job and the methods they use to cope effectively.[43]

The following are leading causes of stress on the job as perceived by the managers surveyed, in order of significance: heavy workload and its concomitant time pressures and unrealistic deadlines; the disparity between what must be done on the job and what the manager would like to accomplish; the general organizational "political" climate; and lack of feedback on job performance.[44]

It is significant that heavy workload and time pressures were rated as the number one cause of stress on the job. The relationship between this perception and a Type A personality is clear. Friedman and Rosenman have reported that time urgency represents over fifty percent of a Type A's behavioral pattern.[45]

The AMA reports that the three most effective skills that managers use to deal with time pressures are delegating responsibility, selectively worrying about only the most important

stress-producing situations, and establishing daily goals and setting priorities to accomplish important objectives.[46]

Few effective managers reach levels of responsibility without a basic understanding of the concept of delegation. Therefore, the discussion will focus on the quality of the delegation, as it relates to stress, and not on the basic principles of delegation.

There seems to be a tendency in many organizations to place people in either overly stressful or tedious positions. Many managers then exacerbate this problem in their method of delegating. Delegation is usually done to relieve hard-pressed managers by sharing their responsibility with subordinates. However, where practiced, delegation usually increases a manager's stress. Managers tend to delegate the routine parts of their job and the more structured problems. The time saved is then spent worrying about the most stress-producing problems. By delegating in this way, managers increase their personal stress portfolio. To be most effective, it would appear that managers should delegate some of their more stressful responsibilities. This would serve a dual purpose. It would reduce the stress level of overloaded managers and increase the stress level of underloaded subordinates.[47] As Peter Drucker puts it: ". . . just figure out what others can do and have them do it. It's that simple."[48]

After effective delegation has balanced the stress load, the next step is to prioritize the duties that remain. By doing this, managers will find it easier to establish daily goals and set priorities.

Time management expert Alan Lakein suggests using an ABC approach to prioritizing tasks. He suggests that managers make a list of all tasks they perform, without regard to importance. Once the list is established, they should then compare the items on the list. Those items on the list that will yield the highest value to the manager should be marked with an A; those with medium value, a B; and those with a

low value, a C. The list should then be further refined and priorities assigned by comparing like values. All tasks marked A should be recategorized by using A1, A2, etc. After this is done, managers should be able to spend their problem-solving (worry) time more effectively and with less stress. By forcing themselves to concentrate on as few tasks as possible, the ABC system offers assistance in mitigating one of the Type A's behavioral patterns, that of trying to be a "one-man band."[49]

The second leading cause of stress on the job is the disparity between what managers must do and what they would like to do. This is a somewhat more complex problem. This finding shows the importance of having jobs that fit abilities and needs. If individuals find no satisfaction in their work, they will not be able to realize their full potential. If they cannot reconcile their individual objectives with those of the organization, the consequences will be a lack of self-fulfillment and daily frustration. If this is the case, managers would be wise to consider another job.[50]

The first two leading causes of stress are within the manager's own ability to control. Factors three and four, the general "political" climate of the organization and lack of feedback on the job, require the assistance of the organization. As the survey reported, if the organizational atmosphere conveys the perception that "it's not what you know but whom you know," the organization will tend to be a very stressful place to work.[51] The organization loses in these cases, too. Studies have pointed out that there is a direct and significant correlation between organizational climate and job performance. Poor climates tend to yield minimum performance.[52]

As my purpose is to identify the skills a manager can develop and use to control stress, I will not delve into how to improve an organization's climate. If the problem seems significant enough, based on turnover, absenteeism, and other pertinent factors, thought should be given to hiring a management consultant to

evaluate the climate and make recommendations for change.

Thus far, the skills mentioned were directly applicable to specific causes of stress. Unfortunately, many of these specific causes are beyond an individual's control. Few people can just get up and leave their jobs because the jobs are not satisfying. Even fewer people are in a position to influence their organization's climate. Therefore, something must be said about coping skills of a general nature.

All work and no play makes Jack a dull boy—and Jill a wealthy widow.

Evan Esar

Coping with stress beyond one's control presents a significant potential danger. Familiar home remedies include a couple of martinis at lunch and again in the evening to calm the nerves; cigarettes by the pack to get through the day; overeating our problems away; and, above all, pills and more pills. In fact, the largest-selling prescription in the world is Valium, a tranquilizer used to relieve the minor symptoms of stress. In management circles, Valium has been called the "Executive Excedrin."[53] All these so-called home remedies are effective short-term stress relievers; sadly, their long-term effects far outweigh any temporary relief they may provide.

Fortunately, new techniques are available as well as some safe and effective traditional methods. The new techniques are primarily aimed at relieving stress by allowing individuals to control their physical response to stress or to develop a healthier attitude toward themselves and their lives. Among the new approaches to stress control are biofeedback and meditation. Some of the more traditional approaches include a program of physical exercise and involvement in religious activities.

Of the newer approaches to stress control, biofeedback is perhaps the most novel. It was introduced in the 1920s, when a German psychiatrist, Hans Berger, discovered that the brain gives off electrical signals that can be measured by a recording machine, now called the electroencephalograph or EEG. Berger identified four types of brain signals, each of which has since been identified with a Greek letter: Beta, Alpha, Theta, and Delta.[54]

When the brain is most active, as when an individual is under stress, it emits Beta waves; when an individual relaxes, the brain emits Alpha waves; deep thoughts provoke Theta waves; and sleep sends out Delta waves. During the biofeedback session, each of these waves is signaled back to the individual through flashing lights or clicking sounds. For example, Beta waves are translated into loud sounds and Alpha waves into a quieter tone. Individuals are then connected to the biofeedback apparatus, most commonly an electromyograph (EMG). The EMG is designed to measure the waves and reproduce the appropriate sound. Individuals are then asked to lower the tone of the clicking sounds. Each time the individual tenses the sound gets louder; when the individual relaxes, the tone softens. By being able to hear the pitch of the EMG tone, individuals are able to control the tension level within their bodies.[55]

As exotic as it sounds, biofeedback appears to offer some distinct advantages over other stress-reduction programs. It takes less time away from the job; it is cheaper than many other methods; and its effectiveness can be objectively measured.

A typical biofeedback program requires only about twelve training sessions of one hour each. Normally, the sessions are conducted twice per week. It would appear relatively easy to work this time into even a busy manager's schedule. The cost, too, compares very favorably with other stress-reduction programs. A standard charge runs about $250 for the complete program. The objectivity of the method is self-evident. Once through the program, individuals are able to reduce Beta waves to

Alpha waves by applying the same mental images they used to reduce Beta to Alpha waves on the EMG.[56]

The ability to control bodily reactions mentally is not new. It has been claimed by Oriental mystics for centuries. Yoga and Zen Buddhism, for example, are methods of individual meditation used to achieve increased awareness of consciousness and well-being, as well as control over heartbeat, breathing, and other bodily processes. The desire of many Americans for stress relief has led to an increasing popularity of various forms of Oriental mysticism.

The most popular of these forms is transcendental meditation or TM. TM was introduced into the United States in the 1960s by an Indian monk named Maharishi Mahesh Yogi. Today, TM has more than a million American advocates, including stress expert Hans Selye.[57]

At the core of TM's wide appeal is its basic simplicity. Training involves only two lectures and one hour of individual attention. As part of their training, individuals receive their mantra, an easy to pronounce but meaningless word which individuals can focus on. Once out of training, meditation requires only two, twenty-minute periods a day. Few people have trouble fitting these periods of meditation into their schedules.[58]

TM received a scientific boost in 1974, when two Harvard doctors, Robert Wallace and Herbert Benson, reported that regular meditation can reduce stress.[59] Following is a report of their study:

> The experiments showed that when subjects meditated, their bodies relaxed in such a way as to reverse the reactions associated with stress. A reduction in the consumption of oxygen and the release of carbon dioxide indicated that the rate of energy production, which increases with stress, had gone down. Blood pressure, another direct indicator of stress, was not reduced by meditation itself; pressure went down during the relaxation preceding meditation, but it then stayed at the low level. Still another indicator of stress—the skin's resistance to electricity—declined. And the concentration of a chemical called lactate,

which is known to increase when stress occurs, also decreased sharply.[60]

Although proven effective, biofeedback and meditation, because of their rather specialized nature, have thus far been limited to relatively few people. However, there are many other methods of a more traditional nature that are available to just about everyone. Two of these methods include physical exercise and involvement in religion.

I have selected physical exercise for inclusion in this article for two reasons. One is the already large and growing popularity of jogging as a form of physical exercise. The other reason is the danger that jogging presents to Type A people. Friedman and Rosenman are adamant on this point. They claim that Type A people do not know how to exercise properly and therefore should avoid it. They base their claim on the fact that Type A people are extremely competitive by nature and cannot establish a sensible, moderate jogging schedule and stick to it. The two miles a day soon becomes five and eventually ten, until the stress on the heart becomes too much. According to Friedman and Rosenman, jogging is responsible for more deaths in Type A people than any other individual factor:

> Approximately 200,000 American men who had never experienced a single symptom of coronary heart disease died suddenly last year. From our own studies of scores of these cases, we have learned . . . more than a third of these men died during or a few minutes after indulging in strenuous activity. In many cases, moreover, the men had been exercising strenuously, regularly, and for years prior to their demise.[61]

Moderate physical exercise, on the other hand, does not seem to cause the same cardiac problems that strenuous exercise does. Therefore, moderate exercise can be an excellent stress control technique. Friedman and Rosenman advise potential exercisers to get a checkup first and then work out an exercise program suitable to their present condition. They conclude with this final piece of advice:

> Never take a wristwatch or stopwatch with you

when you do your exercises. . . . Type A subjects . . . tend to want to time themselves. This miserable offshoot of numeration and/or "hurry sickness" is a particularly pathetic—and deadly-characteristic of some Type A joggers.[62]

One of the least researched methods of stress control, yet one that appears with startling frequency in books and periodicals dealing with stress, is religious faith. In fact, even though the American Management Association did not include religion in its recent survey, it showed up as a recurring theme in the returned questionnaires. The following is typical of the comments they received:

It's disappointing to find no reference . . . to the one solution to stress that has literally changed my life during the past nine years. In 1969 I became a committed Christian and have since experienced the reality of Christ in my life. This has had a profound impact on all interpersonal relationships: family, job, community, etc.[63]

The hope and courage engendered by faith have been expressed in stories of personal tragedy and triumph for more than 5000 years. Rose Kennedy had two sons assassinated, one son killed in combat, a daughter killed in an airplane crash, and another daughter who is mentally retarded. Mrs. Kennedy gives her faith the credit for her surviving those traumas:

I have come to the conclusion that the most important element in human life is faith. From faith, and through it, we come to a new understanding of ourselves and all the world about us. It puts everything into a spiritual focus.[64]

By now, two things are obvious. First, the skills, behaviors, and attitudes mentioned here are just a few of many available to people to help combat stress. Second, there is no one best way to control stress. One person's nourishment may well be another's poison. What is important is for each individual to have some program for dealing with stress. The results of having no methods at all may be disastrous.

Perhaps Charles Knight put it best when quoting advice his father had given him,

. . . your health comes first; without that you have nothing. The family comes second. Your business comes third. You better recognize and organize those first two, so that you can take care of the third.[65]

When I look back on all these worries I remember the story of the old man who said on his deathbed that he had had a lot of trouble in his life, most of which never happened.

Winston Churchill

The growth of the human mind is still high adventure, in many ways the highest adventure on earth.

Norman Cousins

Stress represents a dichotomy. It is both an asset and an anathema. It is neither possible nor desirable to eliminate stress from life. Stress is part of motivation; you can't have one without the other. When kept within tolerable limits, it represents a driving force to achieve and accomplish. However, evidence shows that when internal or external circumstances create either too much or too little stress, the result will be a decrease in performance and ultimately a breakdown in health. Meanwhile, the costs associated with these underloaded and overloaded postures are felt directly or indirectly by everyone. Be it in the form of increased costs for health care, or goods and services, or taxes, stress has become much more than a "personal problem."

Compounding the difficulty of coping with stress is the body's own mechanism for responding to stress. Although the causes of stress have evolved throughout time—from the daily fight for physical survival of our Stone Age ancestors to the daily fight for psychological survival of contemporary humankind—the body's reaction has remained the same. To ensure survival, nature has equipped us with an automatic, stereotyped response to stress.

This has created the dilemma of living in a twentieth-century world with a biological nature largely shaped by evolution to deal with Ice Age problems. That nature is a conglomeration of genetic adaptations to an environment that has largely vanished. It does not help a manager who is sweating over a budget to have quick clotting blood.

Since human genetic adaptation changes with a geological leisureliness, people must have alternate methods of coping in an ever-changing world that is constantly imposing novel circumstances. Research has shown that people can, in fact, modify instinctive responses. Perhaps that is the one thing that sets human beings apart from all other living creatures: they need not be a slave to their genes. People can, through conscious thought, control nature's dictates. However, it is best to modify those instincts now rather than wait for the irresistible force of necessity to demand it. For, as Ben Franklin once said, "Necessity never made a good bargain."

You can increase your capacity to deal with stress in three primary ways. You can reduce the quantity and/or difficulty of the tasks that confront you; you can reduce the time pressures you are under to complete the tasks; and you can increase your coping skills through education.

Interestingly, and significantly, almost all of the techniques for coping with stress involve applying the very principles that behavioral scientists have been advocating for years. Delegation of authority, for example, has proved effective in reducing stress. At the same time,

delegation implies a trust and confidence in subordinates to accomplish the delegated assignments successfully. Delegating without this trust and confidence would appear to be self-defeating, as the delegating managers would probably spend their time worrying about whether the subordinate can and will do the job. Not only is it good management to apply these skills but it also makes good sense from a health standpoint.

In addition to applying behavioral science principles at the workplace, there are other methods that can be used, too. Some people meditate, others exercise, and still others find comfort in their religious faith as their most meaningful way to cope with stress. Regardless of the methods used, the ultimate purpose of all stress control methods is the same: to demobilize the stress response as soon as it is not needed. By returning the body and mind to a more harmonious and normal state, people can conserve energy for subsequent situations.

Practicing stress-control methods appears to enable people to acquire mental, emotional, and physical tranquility on an enduring basis. Knowledge about oneself increases the ability of people to develop greater individual control, a sense of mastery over their own lives, their own difficulties, and their own problems.

> *The mind is its own place, and in itself*
> *Can make a heaven of Hell, a hell of Heaven.*
> John Milton
> *Paradise Lost*

U.S. Air Force Senior Noncommissioned Officer Academy

Notes

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16. Rosch, p. 32.

17. Lloyd Shearer, "On Living Longer," *Parade*, December 30, 1979, p. 6.

18. A prayer given to parishioners in Heath, Massachusetts, 1934.

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22. Selye, p. 39.

23. Kiev and Kohn, p. 7.

24. Selye, p. 27.

25. Friedman and Rosenman, p. 6; Selye, pp. 27-30.

26. John J. Tarrant, *Drucker: The Man Who Invented the Corporate Society* (New York, 1976), pp. 126, 130.

27. Sokoloff, p. 61.

28. Friedman and Rosenman, pp. 9-10, 97-106.

29. Ibid., pp. 14, 180-84; Meyer Friedman, "Modification of Type A Behavior," lecture, First Annual Southern Conference on the Psychology of Health Care, Atlanta, Georgia, 26-28 October 1979

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32. Ibid., p. 80.

33. Tanner, p. 139.

34. Friedman and Rosenman, pp. 85, 193-98; Kiev and Kohn, p. 10.

35. Friedman and Rosenman, pp. 78-79.

36. Tanner, p. 133.

37. Zimmerman, p. 52.

38. Kiev and Kohn, p. 24.

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42. Ibid., p. 235; Hersey and Blanchard, pp. 28-29.

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51. Ibid.

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56. Ford and Hartje, p. 14.

57. Tanner, pp. 144-45.

58. Ibid., p. 145.

59. Walter McQuade and Ann Aikman, *Stress: What It Is, What It Can Do to Your Health, How to Fight Back* (New York, 1974), p. 179.

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62. Ibid., p. 289.

63. Kiev and Kohn, p. 41.

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65. Marshall Loeb, "A Guide to Taking Charge," *Time*, February 25, 1980, p. 82.
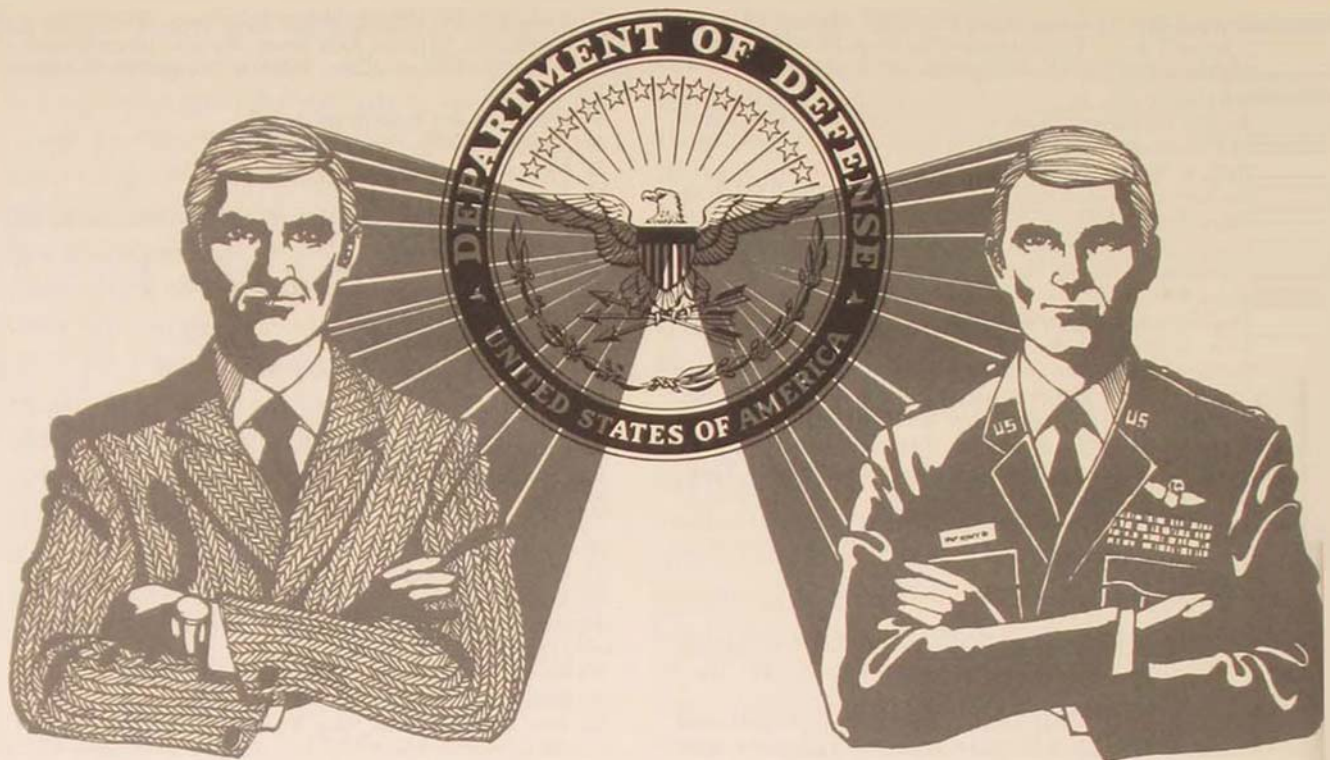
MILITARY PROFESSIONALS AND CIVILIAN CAREERISTS IN THE DEPARTMENT OF DEFENSE

DR. RONALD J. STUPAK

A reflection: academics are likely to be good at general-izations, even though they might not be much good for anything else. Practicing "political administrators" seem not to be inclined at all to generalizations. They think in terms of specific situations, personalities, and so forth rather than in terms of words and concepts. Specifically, what seemed to be real and important to them was "happenings," anecdotes from real life. Without discounting the value of these and without trying to make a comparison of values, I found myself wishing for a participant who could say: "From my experience, I offer these three generalizations (or propositions)."

Dwight Waldo[1]

IN THE policymaking and administrative processes of the defense establishment, the relationship between "armed bureaucrats" and "civilian bureaucrats" constitutes an important dimension influencing the effectiveness of the defense organizations as well as on the quality of the national security environment. However, the preponderance of literature and commentaries on civilian-military relations in the defense community deals mainly with the higher political levels of analysis.

The nitty-gritty of management techniques, procedural innovations, and administrative concerns in the defense community tends to be overlooked by academics, policymakers, and politicians who want to describe and analyze only at the very highest theoretical levels of concern. Therefore, an effort needs to be made to home in on the operational and managerial levels of the policymaking process in order to highlight the managerial innovations and the bureaucratic tensions between career officers and career civil servants.

The Tension Factors

Military leaders' perceptions of civilian executives, and vice versa, are often grossly inaccurate, obviously questionable, and certainly one-sided. However, some are quite accurate. They stem from different provisions of law, regulations, manner, tone, training, culture, and varying perceptions of differential treatment. In fact, the dynamics of civil-military relations create multiple and damaging tension points at the management/executive levels throughout the Defense Department.[2] Therefore, it is necessary to analyze, describe, and demonstrate the problem areas as well as to suggest some techniques or adjustments that can remedy these areas of potentially ineffective management in the defense establishment. Realizing the importance of Carl Jung's observation that perception is probably 90 percent projection, I suggest that the following factors (extracted from constant interactions with military officers and career executives during the past five years) are relatively constant tension variables; they hold fast for civil-military relations in the management of the defense community at the highest executive levels. It is my contention that too many of these tension factors have existed far too long without proper attention in the post-World War II defense environment because of academic neglect, personal ego needs, and policymaking indifference.

professionalism

The fundamental tension point relates to the concept of professionalism. Professions can be thought of, in part, as frameworks of specialized skills, knowledge, behavior, and values. And, as Samuel P. Huntington has made clear, the military is a professional body in terms of expertise, social responsibility, and corporateness.[3] In addition, as John P. Lovell and others have demonstrated, the military profession is undergirded by a value socialization process that is galvanized into reality most clearly at the service academies.[4] While the value component is the most elusive of the professional undergirdings, it probably provides the best clues to fundamental differences between professions. In effect, the military person is clearly identified with a profession. On the other hand, the defense civilian executive is not a member of a unified, overarching profession but may be a lawyer, engineer, or physicist; he does not identify with his civilian colleagues in the same professional sense as his military colleagues do.* Hence, this professional unity of the military, especially in terms of similar value preferences, makes it appear as a power phalanx compared to the diversity and confusion that exists among civilian executives. As one of the supergrades at the Federal Executive Institute (FEI) said, "The bastards all know each other. They think alike, act alike, and talk alike. The 'ring-knockers' hang together, while we civilian executives always seem to hang alone."

executive perspectives

To be successful in the management process, one must have a clear understanding of the demands of his role. As one rises in the organization, those roles demand different skills, styles, performances, and perspectives. In fact, the

*Although I gladly acknowledge and support the growth of the number of women in the management processes of the defense establishment, for the sake of linguistic simplicity, I shall use the singular pronoun *he* and *his* throughout.

movement from middle management into the executive role demands a major change. New expectations are added to an individual's capabilities. As David Gray has demonstrated, an executive must forgo certain skills and perspectives at the executive level that he used extensively as a manager (see accompanying chart).[5]

Attributes of Managerial and Executive Roles

Manager	*Executive*
Task oriented	Goal oriented
Industrious	Thoughtful
Action oriented	Results oriented
Efficient	Effective
Short-term planner	Long-term planner
Production oriented	Mission oriented
Recruits for jobs	Attracts talent
Works in present	Works in future
Manages dollars	Manages resources
Observes operations	Studies environment
Agency perspective	National perspective
Product oriented	Process oriented
Recommends	Decides
Provides staff work	Uses staff work
Commands	Directs
Champions	Mediates
Represents function or unit	Represents agency
Sees parts	Sees whole
Operates in internal politics	Operates in internal and external politics
Analyzes	Synthesizes
Data oriented	Concept oriented

The military professional has made this adjustment much better than his civilian counterparts. Hence, the predominantly managerial perspective of civilians conflicts with the clearer executive perspective of the military. In fact, the specialist orientation of civilians leads them to cast aspersions on the more generalist orientation of the military executives, who constantly come and go. (In order to gain a better perspective on this, one should note that 80 percent of the supergrade civilians have had their careers totally within one agency.)

decision-making

The tensions between the military and civilians are particularly notable in the decision-making process, centering on three aspects of the process:

• The civilians believe that the military executives want to do things too quickly in order to make a mark for themselves during the short time they are in their organizational executive slots; while the military are convinced that the civilians "drag their feet" and have too much of a lethargic "civil servant perspective" in terms of production.

• There tend to be different perspectives relative to each other's competences: The military are convinced that the civil service has too much deadwood because of the seniority system; while the civilians believe that too many military will rush to decision in order to avoid the second half of the "up-or-out" syndrome.

• The civilians are certain that the short-range perspective of the "three year military executive" leads to dysfunctions in the incrementalism necessary for sound decision-making; while the military is convinced that the civilians do not want to work the long hours at night and on weekends to accelerate what the officers perceive to be a sluggish decisional process.

cross-structural ignorance

Ignorance of the other's personnel, promotion, and pay systems is close to tragic. Individuals on both sides perceive the other side with various distortions based on myth, prejudice, and folklore. In essence, mostly because of a lack of knowledge, each side seems to feel that they are treated as "second-class citizens" relative to the other. Anthony Wermuth makes

this point in relation to pay systems by quoting Lieutenant General Leo E. Benade after a December 1977 meeting of the President's Commission on military compensation:

> If there is one thing that seems to make people in uniform climb the wall, it is to be compared to civilians. In fact, the reaction is almost emotional in my judgment. You have to recognize it and allow for it. And they bitterly resent any attempts to compare and to talk comparability in pay. If I could give one recommendation to the Department of Defense, it would be to drop from their lexicon this word "comparability." It makes far more enemies than friends.[6]

At the same time, relative to President Carter's 1981 budget submitted to Congress, the *FEIAA Newsletter* notes:

> Specifically, the 1981 budget provides a 6.2% pay raise for federal civilian employees and 7.4% raise for military personnel. In effect, a distinction is being made by the Administration between military and civilian personnel, with an apparent nod towards the military.[7]

Of course, pay is only one specific example, but there are many others, and the civilians are loudest in proclaiming their "rigged structural inferiority" vis-à-vis the military executives in the Department of Defense.

world view

The world view of the military executive seems to be more sophisticated in every respect than that of his civilian counterpart. The military professional enters a systematic training and developmental program that prepares him for dealing with the "big picture" as he moves into an executive role; while the civilian executive's development tends to be haphazard, sporadic, and somewhat too technical in preparation for executive positions or perspectives. For example, Fred Malek reports that "the military services spend about eight times the amount in improving the managerial effectiveness of the officer corps as is spent on civilian managers."[8] In addition, most of the supergrades who have attended the Federal Executive Institute in the past five years report that it constitutes the

first real opportunity they have had to spend an extended period of time on management training during their entire careers. Sadly for these generals and admirals of the civil service, it sometimes comes too late in their careers to make a difference.

More specifically, in the matter of providing higher education at the war colleges for its people, Anthony Wermuth reports that the

> Department of the Army sends about 250 military officers to war colleges each year; and the Navy and Air Force send comparable numbers. Up to 1964 the number of Army civilian employees sent by the Army to war colleges was zero. In 1964, one DA civilian was sent to the Army War College, then one each year through 1971, three in 1972, two in 1973, three in 1974 and 1975, two in 1976, and one in 1977. Total military executives sent to war colleges by the Army between 1950 and 1977: about 6750. Total civilians sent, same period: 22.[9]

The military executive thus is educated to attain a much broader perspective than his civilian counterpart in strategic, managerial, and political concerns.

power

An Air Force civilian executive reported to me: "Hell, I run my agency. The colonel is simply a figurehead who's here for a short time. And after him, there will be another colonel who I will educate, train, and command." At the same time, a military officer in charge of a U.S. Navy research and development shop reported a concurring opinion: "The civilians really run the shop. I am here for too short a time to have a lasting impact. Sure, I will affect some things, but hell, the civilians will be here forever and if they want to, they'll change it back again."

Yet, on the line, there are many civilians who believe they "work for the military people." No matter how capable they are, they believe that the best jobs are too often "saved for the military." "After all," said one of the civilians, "I do work in the Department of *Defense*."[10] And, of course, this power position of leader-

ship is strengthened by a group of officers who believe that they possess the penultimate command leadership capabilities, undergirded by the belief that they are the professional experts in the "management of violence," which, to them, is the bottom line of what the Defense Department is, and ultimately what it does.

cross-horizontal linkages

There is an implicit hint from many military executives that civilian employees are considered to have basic interests more in common with other civilian employees of the federal government than with their military colleagues. On the other hand, many civilian executives are convinced that military people have more in common with other departmental national security executives, think-tank entrepreneurs, and strategic academic consultants than they do with their civilian colleagues. Some civilian executives are convinced that the military's linkages outside the immediate management team are calculated on the "up-or-out" system. The focused retirement framework of the military is credited by some civilian executives with encouraging military executives to seek second careers at the expense of agency or project commitment. In essence, the military are accused of establishing linkages with universities, consulting firms, and even with other federal agencies in order to smooth the way for "meaningful work" after retirement.

visibility

Civilian career executives manifest a distinct jealously of the constant media attention given to their military counterparts. They claim they do all the "trench work," while the colonels, generals, and admirals do all the "public relations and visibility work." The civilian executives are convinced that most "Americans don't even know who we are; while the military officers are equated to presidents, senators, and ambassadors." In addition, the civil servants believe the military executives "play to the

grandstand," at the expense of the hard, nitty-gritty work that needs to be done internally at the Defense Department. And though these accusations may be skewed or overblown, it is clear that the study by David Moore and B. Thomas Trout supports the contention that visibility is an absolutely essential ingredient for success in a military career.[11] Furthermore, the military has been written about, researched, and portrayed at a much higher level of interest, sophistication, and importance than any of their defense civilian career colleagues.

fighting man, managerial soldier, and military leadership styles

Tensions between civilian careerists and military executives are exacerbated in the current post-Vietnam period because the military profession itself is going through three extremely rancorous debates in search of its own identity.

(1) Some segments of the military are searching for new tasks and missions to carry the armed forces through the perceived lean years of the post-Vietnam period; included are questions of inflation, comparative analysis, and cut-back management, the 1981 defense budget requests notwithstanding. At the same time, others want to eliminate nontraditional tasks and missions so that the military professional can return to more fundamental fighting-man tasks. This latter group wants to overturn or debunk many of the management tasks and civilianization styles that the military undertook during the McNamara years and since. This debate within the military will have tremendous impact on the training, development, and cultivation of the future leaders in the defense establishment.

(2) In the post-World War II environment, a military prototype identified as the "managerial soldier" has emerged. This is the person who rises to the institutional apex of the military profession by becoming a military executive competent in all the managerial, methodological, and statistical techniques. In effect,

managerial expertise is thought to be more essential to success than the degree of command capability identified with the more traditional fighting-man role. This prototype is being challenged by those military professionals who contend that the military man is becoming too much of a manager.

(3) A contemporary debate of major import has evolved concerning leadership styles. For approximately 30 years, the military leadership had a draft that it could depend on to produce tremendous amounts of manpower. However, in the all-volunteer military environment of today, women and minorities are entering the ranks of the services at an accelerated pace, and unionization is a much discussed topic. This has produced a question of what kind of leadership style is most appropriate to the changing followership that has evolved in the all-volunteer service.

These in-uniform dialogues have had dramatic systemic impacts on the overall framework of the defense establishment by causing role conflicts, role ambiguities, and conflicting signals to the military's civilian colleagues. Some say that the military must rekindle the basic values of its traditional command structure. Others are demanding a new leadership style to lead troops from different cultures, groups, genders, and races. In effect, a much more participatory leadership stance is encouraged.

the political/career interface

The political/career interface, which causes problems in all federal agencies, leads to even "muddier and madder" civil-military relationships. It leads to a tripartite conflict among the military officers, civilian careerists, and political appointees, with each group sometimes playing power games in order to get its way in the management process. It thus creates shifting coalitions, questions about who is in charge, and it sometimes even leads to a transference of dislike to all civilians by military officers. As one officer said to me, "Since McNamara and his 'whiz kids,' I'll do all I can to make sure that

strategically, theoretically, and operationally the civilians never dominate the Defense Department again as they did (or as we let them) from 1961 to 1975." This overlay of the political/career interface needs to be factored into the civil-military equation before certain basic institutional relationships can be expected to change for the better.

What Needs To Be Done?

What does all of this mean? Several operational conclusions can be drawn from this analysis.

• Since there is such a dearth of quality research at the operating levels of the Department of Defense, it appears incumbent on academics and policymakers alike to "elevate their guns a little lower," in order to create or uncover systems, techniques, and management styles that will make the Department of Defense operate more effectively on a day-to-day basis in the 1980s.

• It is essential that we come to grips with the problems of military executives and civilian executives and do something concrete and practical about ameliorating the negative, destructive stereotypes in order to take advantage of the positive, creative tensions that the civil-military interface also produces. These stereotypes need to be confronted openly in order to reduce unnecessary frictions. If it is a "real problem," then we must deal with it!

• It would be beneficial for the American Society for Public Administration (ASPA) to create a "Section on Defense Administration." Since ASPA is the overarching professional organization for public managers and executives, it could (and maybe should) serve as an intellectual forum for dialogues between civilian careerists and military executives on ways to improve their cooperative performance and leadership skills in the management of the defense segment of the federal government.[12]

• There needs to be a visible effort to improve the training and development of the civilian

careerists in the Department of Defense. At the same time, there should be more opportunities for dialogue, education, interaction, and training among officers and civilian careerists. The leadership demonstrated in this area by the Naval Aviation Executive Institute should be shared with and emulated by other subgroups in the Department of Defense.

• The military profession must come to some definitive conclusions as to what its officers are going to look like in the future. In effect, until the debates within the military are settled in some consensual manner, the tensions in civil-military relations at executive levels will continue to be overly confused, complex, and conflictual due to basic role and leadership ambiguities on the part of the military professionals themselves.[13]

THE brightest prospect for a positive impact on civil-military relations at the executive level within the Department of Defense is the Civil Service Reform Act (CSRA) of 1978. The act established a Senior Executive Service (SES), which stipulates that: civilian executives are different from civilian managers; training and development are now required for all who want to enter the Senior Executive Service; and executive competencies are now considered as essential as functional/specialist competencies in the climb to the top of the career civil service ladder. Hence the education, devel-

opment, and perspectives of civilian executives in the future will become more cosmic in strategic, managerial, and political concerns. The CSRA has begun to generate a professional perspective as well as a mutual protection assertiveness on behalf of those currently in the SES.

It is becoming increasingly an accepted organizational tenet that behavioral techniques such as intergroup confrontation meetings, team building, leadership workshops, and organization development are essential ingredients for the effectiveness of the modern, massive, multiethnic and multicultural corporate structures of the 1980s.[14] Since these techniques require personal cooperation, lateral bargaining capabilities, and interpersonal behavioral skills, they should impact on the Department of Defense in such a way as to lead to transformed and effective relationship patterns at all levels and in all contexts, without necessarily destroying situational necessities and beneficial competitions in the defense establishment.[15] For at the base of efforts to improve civil-military relations is the eternal quest to balance America's limited resources as effectively as possible among the ever-present three competing priorities: near-term readiness, midterm modernization, and long-term sustainability[16] and to do all this as cost effectively as possible.

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Notes

1. Thomas P. Murphy, Donald E. Nuechterlein, and Ronald J. Stupak, *Inside the Bureaucracy: The View from the Assistant Secretary's Desk* (Boulder, Colorado, 1978), p. 177.
2. My special thanks to Anthony L. Wermuth for his excellent observations in *An Armored Convertible: Shuffling Soldiers and Civilians in the Military Establishment* (Carlisle Barracks, Pennsylvania: Strategic Studies Institute, October 1979); and in "Civil-Military Relations in the Department of Defense: Perspectives, Perceptions, and Proposals," *The Bureaucrat*, Spring 1980.
3. Samuel P. Huntington, *The Soldier and the State* (New York, 1964), chapter 1.
4. John P. Lovell, *Neither Athens Nor Sparta? The American Service*

Academies in Transition (Bloomington, Indiana, and London, 1979).
5. David E. Gray, Vice President for Administration, California State University, Long Beach, California, prepared the comparative checklist as a member of Class 6 at the Federal Executive Institute.
6. Wermuth, *The Bureaucrat*, pp. 3-4.
7. "Pay Proposals Pose Problems and Confusion," *FEIAA Newsletter*, March 1980, pp. 1-2. It should be noted that this area of economic concern could become even more raucous if the tenets of "cut-back management" become imbedded in defense spending.
8. Frederick V. Malek, "The Development of Public Execu-

tives," *Public Administration Review*, May/June 1974, p. 231.

9. Wermuth, *The Bureaucrat*, p. 9.

10. Though this was said to me by a civilian supergrade, Wermuth reports that the same thing was said to him by a military officer; Ibid., p. 16.

11. David W. Moore and B. Thomas Trout, "Military Advancement: The Visibility Theory of Advancement," *The American Political Science Review*, June 1978, pp. 452-68.

12. ASPA President Patrick J. Conklin made the establishment of a "Civil-Military Section" one of the goals for his 1980-81 term of office.

13. See Ronald Fraser, "The Captain As Manager," *The Bureaucrat*, Spring 1979, pp. 14-21.

14. Donald A. Schon, *Beyond the Stable State* (New York, 1971).

15. David Katz, "The Network Overlay in Defense: Helping Large Bureaucracies Do Things Better," *The Bureaucrat*, Fall 1980.

16. General Edward C. Meyer, "Toward a More Perfect Union in Civil-Military Relations," *Parameters*, June 1979, p. 83.

IRA C. EAKER ESSAY COMPETITION

The deadline for the first annual Ira C. Eaker Essay Competition has been reached, and a review panel is already screening the entries. The final judging will take place during the summer, and winners will be announced in our September-October 1981 issue. The officers of the Ira C. Eaker Essay Competition thank you for your participation and creativity in making this first annual competition a success.
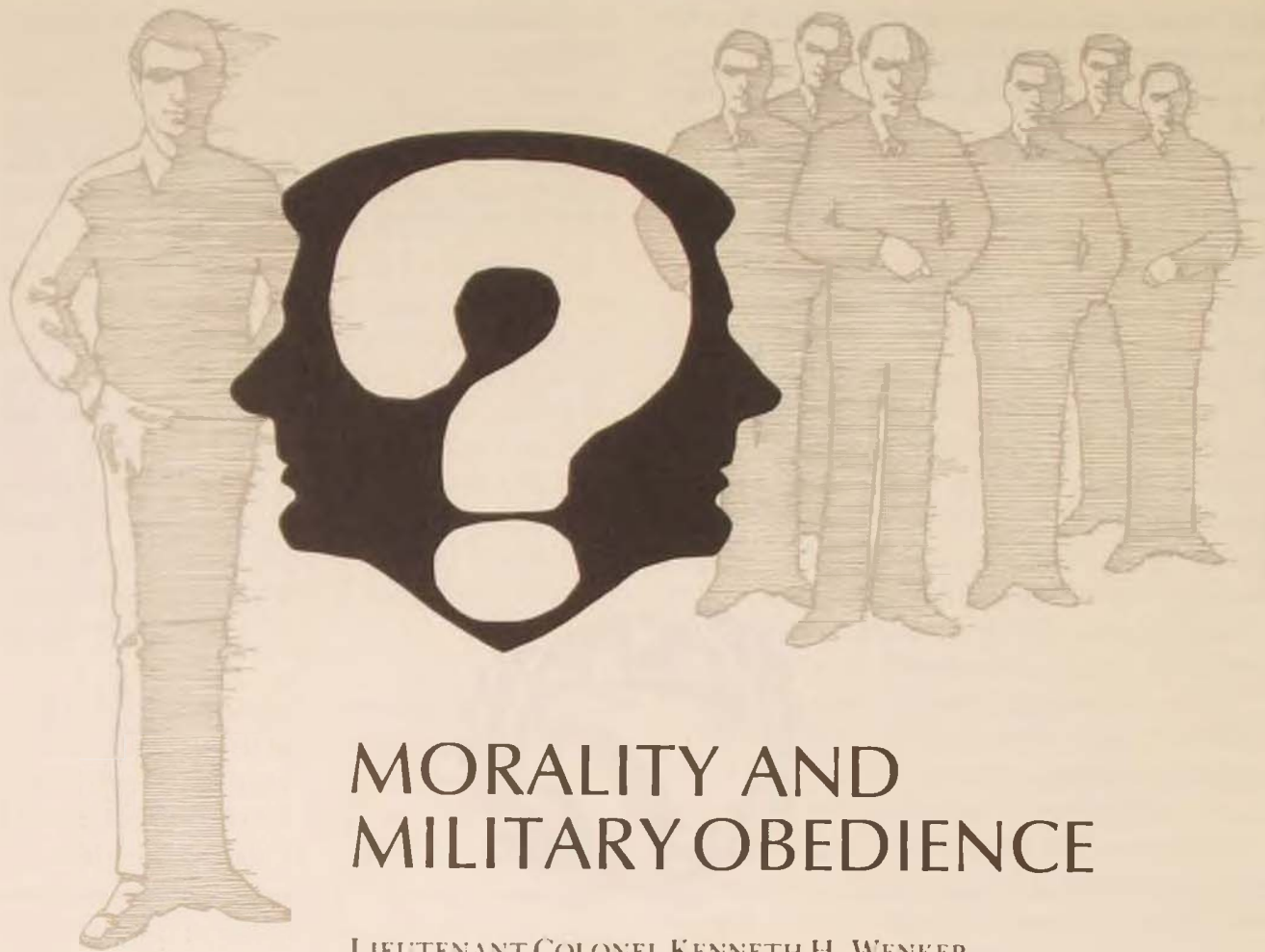
MORALITY AND MILITARY OBEDIENCE

Lieutenant Colonel Kenneth H. Wenker

DURING the Vietnam era, a common theme in both secular and scholarly writing was the danger of obedience to authority—especially military authority. The psychological findings of the experiments conducted by Stanley Milgram (in which persons appeared willing to torture others—even to the point of death—on the orders of an unknown, nebulous "authority") were presented by the media as evidence of the immorality of obeying authority. Alleged war crimes in Vietnam were often presented as evidence of our immoral willingness to obey others. Parallels were drawn between the obedience displayed by various Nazi officials during World War II and the obedience displayed by our own military personnel in Vietnam. Our refusal in 1945 to accept the Nazis' appeal to military obedience as a defense for their war crimes was seen as demanding, in a different era, that we grant primacy to personal freedom and independence over obedience and the subordination of the individual to the group.

Times change. We have put an unpopular war behind us. We have entered the era of the all-volunteer force. We have, in various ways, emphasized the importance of the individual soldier and his or her autonomy. In fact, many say we have gone too far, that people have bought the plea for freedom, independence, and autonomy at the expense of proper functioning of the armed forces. Discipline, obedi-

ence, a sense of group identity, and the willingness to subordinate personal desires to the good of the whole seem to have weakened. Many now question whether we would be capable of defending our nation even if we had large numbers of well-equipped soldiers: our soldiers are seen by many as psychologically, morally, and spiritually inadequate. We must, it seems, reemphasize obedience and associated virtues.

The shift in our attitudes toward obedience reflects a dual tension. The first tension exists between the freedom and autonomy of the individual—traditionally valued in our country—and the need for individuals to subordinate themselves to group goals. The second tension is between the awesome evil that is possible through a misapplied obedience and the tremendous benefits to society as a whole that are possible if we cooperate as obedient citizens. If we obey, we run at least some risk of great evil, as in Nazi Germany; but if we do not obey, we lose the opportunity for good that results from working as a group rather than as individuals.

I suspect that these tensions can never be totally resolved, but they should not on that account be ignored. We can minimize these tensions through improved understanding of the issues and a commitment to moral maturity. A *mature* soldier can come to an obedience that is morally autonomous and yet refuse to participate in immoral group activity; the mature soldier could decide if he has a moral obligation to obey. Such a decision relieves the tension between moral autonomy and obedience because each person makes his own decision. And because it is a *moral* decision, the second tension is also alleviated.

Autonomous obedience is a fearful thing to both superiors and subordinates. Superiors fear it for two reasons. First, it is not something that can be imposed; it must be chosen. Second, it has limits, limits imposed by morality. On the subordinate's side, autonomous obedience demands tough moral decisions rather than mere acceptance of previous conditioning. Unfortunately, as the existentialists remind us, such moral decisions and the responsibility associated with them are indeed fearful.

The purpose of this article is to shed light on the moral decision about obedience that the morally mature soldier must make. It is written from the perspective of the subordinate, which ultimately accounts for the approach to authority, obedience, and autonomy presented here. The question is whether a soldier has a moral obligation to obey.

BEFORE any substantive discussion of the moral issue takes place, we must come to a common understanding of the terms *obedience, authority,* and *autonomy.* While this is a formidable task—given the extensive literature and controverted nature of these concepts—I believe that the perspective of this article points a way toward such an understanding. Consider a commander ordering a soldier to do something. The soldier's question: Is there a moral obligation to obey the authority?

At this point academic quibbling could arise to the effect that military commanders are not *really* authorities and that it is not really obedience that is at stake, but that objection does not change the serious question of whether the soldier has a moral obligation to obey. Traditionally, the question was whether one should obey military authority. If one rejects this terminology, I endorse the use of whatever terminology covers the substantive issue at hand.

What, then, is a military authority? Given our perspective, it cannot be looked on as one who a priori ought to be obeyed—otherwise we trivialize the soldier's very real moral dilemma. Furthermore, the authority is not necessarily an expert and does not necessarily have better judgment, knowledge, or experience. Charismatic leadership is not a necessity. Even the ability to reward or punish will often be insignificant—either because the subordinate feels he can disobey without getting caught or

because it is not reasonable to believe that authority will use the power to reward or punish.

It is more desirable to look on military authority as filling a very specific societal role. Essentially, authority constitutes a societal decision procedure.[1] What makes one an authority is the fact that his decisions become societal decisions. The commander of a military unit in the United States armed forces is an authority because his decisions, within societally (i.e., legally) established limits, are accepted by the citizenry as a whole as society's decisions concerning the specific military unit. The force of the commander's order is not that it is his or her order but that it is society's order. A commander's illegal orders have no clout, specifically because they are not the society's orders. Society's acceptance of authority as its decision procedure makes the authority's decisions authoritative. The question, then, is whether there is a moral obligation to obey such societally authoritative orders.

Given this perspective on authority, one can see that there is no moral obligation to obey authority merely on the grounds that it is authority. (The Mafia chief is also an authority in the same sense, although in a different society.) A moral obligation to obey must rest on something more than the mere fact of authority.

But authority is not extraneous to obedience. Obedience is not merely doing what another decides but rather doing it because it is the decision of an authority. When the robber with a gun orders me to hand over my wallet, I willingly comply; but I do not *obey*, unless we use "obey" in a very broad sense. *Complying* is a matter of doing what another wants us to do—for whatever reason we decide to comply. *Obedience*, on the other hand, is a specific variety of compliance. It is a compliance based on authority. In other words, an authority is a necessary condition for obedience. When we obey, we do so because someone's decision is authoritative.

But this does not mean that when we obey

we do so *just because* someone's decision is authoritative. For example, suppose that (1) a legitimate authority decides that a subordinate is to do something, *x*. Further suppose that (2) the subordinate has determined that doing *x* is valuable whenever the authority says to do *x*. Now suppose that (3) the subordinate does *x* because of (1) and (2). It would seem that the subordinate is obeying. He is doing *x* whenever the authority says to. In other words, he is doing *x* because *x* has been authoritatively decided but not *just because* it has been authoritatively decided. He is doing *x* because of (1) but not *just because* of (1). He is doing it because of (1) and (2).

It is important to reject this *just because* terminology, for rejecting the terminology allows us an obedience that is more than the blind response of a robot. If obedience were based only on authority, then it would not matter whether the authority is a Hitler in Nazi Germany, a Mafia chief, or a Boy Scout patrol leader. Any other consideration besides the existence of the authoritative order would then be extraneous. And since authority by itself cannot morally justify obedience, any obedience based only on authority would not be morally justified. Hence, it is not enough to say to the subordinate, "You should obey me because I'm the authority." The intelligent subordinate will recognize that Hitlers and Boy Scout patrol leaders are authorities also. When trying to justify obedience, we must appeal to more than the fact of authority. Obedience should not be "just because" of authority. Otherwise the obligation to obey is equally strong for Hitlers, chiefs of staff, and Boy Scout patrol leaders.

The moral person obeys because of the authoritative decision, but not "just because" of it.

ANOTHER somewhat ambiguous term is *autonomy*. It can mean at least three different things: (1) deciding for oneself what one will do, (2) "doing one's own thing," or (3)

making one's own moral decisions.

Suppose *autonomy* is interpreted as deciding for oneself what one will do. Then some people will notice a tension between autonomy and obedience because they see a dichotomy between what one decides to do and what others decide one will do. They suggest that if one goes along with a group decision, he is, by that very fact, not being autonomous. This is mistaken. Suppose that a group of friends decides to eat at a particular restaurant although one of the group does not enjoy the food there and tries to persuade them to eat elsewhere. Now the loner has to decide whether to cooperate in the group decision or act on his own. The decision is his. Whichever choice he makes is autonomous. In other words, the individual can autonomously choose to subordinate himself to the group decision. Similarly, in the armed forces, an individual can autonomously choose to subordinate himself or herself to the group decision. Since the group decision is arrived at by authoritative determination, such autonomous subordination is obedience. One can autonomously obey, in the first sense of autonomy.

Suppose autonomy is interpreted in the second sense, "doing one's own thing." If a person decides to go along with a group decision, then he is autonomous in the second sense only if his own desires and the group's decision happen to coincide or if he is psychologically predisposed to obey. Normally one cannot obey and be autonomous in this second sense at the same time. But here the tension between obedience and autonomy is not a moral problem at all because there is no moral need to be autonomous in the second sense of the word. There is no moral need to "do one's own thing," which *could* include rape, pillage, and plunder. Further, sometimes "doing one's own thing" should yield to group aims. While there is a tension between autonomy in the second sense and obedience, it is not a moral tension in that there is no moral need for this kind of autonomy.

If we interpret autonomy in the third sense,

"making one's own moral decisions," then there is a moral need for autonomy—morality is normally understood as demanding that the moral agent make his own moral decisions. But then there is a tension only if we see obedience and authority in such a way that we obey authority *just because* the moral agent is an authority. And we have already seen fit to reject the *just because* terminology. Essentially, moral autonomy poses no problem for obedience because authoritative decisions as such are only societal or legal decisions. And what is legal does not define what is moral. Authoritative decisions establish societal responsibilities for the members of that society, but each member must autonomously determine whether those societal responsibilities generate corresponding moral responsibilities. There is no tension between obedience and the third kind of autonomy as long as we do not obey *just because* an authoritative decision has been made.

THE commands of a military authority, then, are societal decisions. Those individuals who have reached such a level of maturity that they can be considered autonomous moral agents, when confronted by such decisions, must autonomously decide whether they *should* obey such decisions (and hence cooperate with the group) and whether they *will* obey. Making the moral decision requires an appeal to reasons. (See the Appendix for some common arguments allegedly supporting obedience, which are, in reality, not applicable to the issue.)

If we question whether there is a moral obligation to obey a societal authority and seek reasons for or against such an obligation, we are really asking whether we can derive an obligation to obey from other, more fundamental obligations. Ultimately, we would base the obligation to obey on the most basic principles of morality. Unfortunately, there is no general agreement about what constitutes the most basic principles of morality. The best we

could hope to do would be to assume, in turn, specific ethical theories and show that the obligation to obey can or cannot be derived from each one. But then our conclusions would necessarily depend on the ethical theories considered, and to provide conclusions that would be widely accepted would mean deriving the obligation to obey from different ethical theories. Obviously, this would be an extremely tedious task.

Fortunately, that is not necessary. There are certain less basic rules of morality that are justified in one way or another by virtually every practical ethical theory one might be inclined to accept. "Do not lie," "Keep your promises," "Do not steal," and many others are accepted by nearly everyone. Our approach will be to attempt to derive the obligation to obey from these generally accepted moral rules. We will make no attempt to determine the basic moral principles on which such generally accepted rules are based. This is not to suggest that there are no reasons for accepting such rules; rather, it reflects our intention of not accepting or assuming particular ethical theories. We are not interested in why promise-keeping, for example, is morally obligatory; we are interested in whether a moral obligation to obey can be derived from the obligation to keep promises.

The obligation to obey military authority can be derived from several different moral rules, each one of which is independent of the others. I will consider only three of these reasons and show that an obligation to obey can be generated from an obligation to keep promises, from an obligation to fulfill contracts, and from the obligation to act so as to achieve one's moral goals.*

In all of these arguments we will be interested in establishing only that there is a prima-facie

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*There are additional reasons for the obligation to obey, for example, fairness and the golden rule. However, I will not treat these grounds, which are not so crucial to obedience as the three that I am treating.

moral obligation to obey military authority; that is, one ought to obey, provided that obeying would not involve a greater wrong than disobedience. Any time we suggest that there is an obligation to keep a promise or to obey there is no intent to suggest that such obligations are absolute.

promise-keeping

This reason for obeying is perhaps the simplest. It is based on the generally acknowledged moral commitment to keep promises. In general, as our promises become more and more solemnly made and as the subject matter of the promise becomes more and more important, the obligation to keep the promise becomes stronger and stronger. But all American military personnel have made a promise to obey in the form of the enlistment oath or the commissioning oath. Therefore, all American military personnel have an obligation to obey.

Great efforts are made to solemnize these oaths. All present stand at attention; the right hand is raised; a relatively high-ranking officer usually administers the oath; the flag is displayed prominently. Where a large number take the oath, there will often be a full parade. Normally those present will wear their dress uniforms. Speeches by dignitaries often help to emphasize the importance of the event. These extraordinary concerns for an action that takes less than a minute to perform serve to impress on all concerned the importance of this promise. On the whole, it would seem that if there ever is an obligation to keep a promise, there would be an obligation to keep this one, due to the special efforts made to solemnize it.

On the other hand, factors could apply in some situations that would tend to weaken the obligation to obey based on promise-keeping. Compulsion, ignorance, or fear can have a dampening effect on the obligation to keep a promise. This is particularly significant when we are dealing with draftees or with those in the current all-volunteer force who enlist out of economic necessity.

the obligation to keep contracts

Ethicists consider the general obligation to keep promises to be an obligation of fidelity; but an additional obligation, an obligation of justice, arises when the promise is made in the form of a contract. Specifically, when a contract has been made calling for an exchange of goods and services and when one of the parties has fulfilled his or her part of the contract, then the other party is obligated in justice to pay for the goods or services. If a person accepts a loaf of bread from a baker, promising to pay for it the following week, the obligation to pay the money is much more than a matter of keeping a promise. It is a matter of paying what is owed, a matter of justice. To fail to pay is more like stealing than like breaking a promise.

When we enter the armed forces, we are not intending a purely gratuitous act. Of course, there may be elements of patriotism and a certain enthusiasm for the opportunity to display battlefield heroics; but normally we expect to be paid in a variety of ways. Of course, the taxpayer does not pay us out of generosity. We are expected to earn our benefits by accepting the assignments we are given, by doing the jobs the authorities decide we are to do, by separating from our families when the services decide we will and for the period of time the services decide we will, being ready to go to fight in a way and be shot at in circumstances over which we will have no control, etc. To look at it in another way, the individual member of the armed forces is paid to do a job, and the job description is contained in various regulations and in the Uniform Code of Military Justice. Since a person owes a fair day's work for a fair day's pay, there is an obligation in justice to perform those tasks called for in the job description—including obeying authoritative military decisions.

The services try to make this obligation more obvious by placing a fairly precise statement of what they will provide the prospective serviceman on the same form (DD Form 4) on which he promises to obey military authority. By putting both of these on one document, the reciprocal nature of the contract is emphasized.

We must recognize, however, that it is at least possible, especially with draftees, that some individuals want no part of the military's pay and allowances. They may look on their pay as something that society has forced on them; it could be that they are the unwilling recipients of both the pay and the job. If so, we can grant to the extent that the contract has been forced, to that extent the obligation is less binding.

The majority, who accept their pay willingly and at least in some way understand that it is recompense for the job they are doing, have an obligation in justice to do that job as specified. To the extent that a serviceman looks on pay, allowances, and benefits as something due for a job, he or she should look on obedience as something due for the pay, allowances, and benefits.

obedience as a functional imperative

The moral starting point of this argument is that there are strong moral goals of the armed forces and that we have a strong moral obligation to choose the best means of attaining these goals. These goals clearly are considered extremely important; indeed, they are so important that we are willing to fight wars in order to realize them. Ultimately, these goals are based on our commitments to various rights and freedoms. A military force is not a self-justifying sort of society. The existence and use of such a force can be justified only by reference to more ultimate values. The armed forces are means to very important moral ends.

Realizing the goals of the armed forces requires more than a lot of soldiers. There must be a societal cooperation with each member's efforts meshing with the others, but such societal cooperation cannot just happen: conscious societal decisions must take place, and thus societal decision procedures are necessary. But if the use of authoritative decision is the

decision procedure and if that decision procedure is effective and fair, then there is an obligation to obey. Obedience becomes the condition which allows us to attain the moral goals of the armed forces. And so obedience is a functional imperative, provided that the decision procedure is effective and fair.

Is the decision procedure effective? If we accept Brian Barry's list of the types of possible decision procedures (conflict, voting, bargaining, discussion of merits, chance, contest, and authoritative determination),[2] it becomes clear that *some* kind of authoritative determination must be used for societal decision-making in a military society, given the need for societal unity, rapid decisions, and decisions that must be based on the merits of the alternatives. The question, then, is not whether authoritative determination is an effective decision procedure but rather whether our particular system of authority is effective. For the most part, history documents its effectiveness in that we have established, organized, equipped, trained, transported, and used an effective armed force. Our system is effective, but there are some problems. These problems can be associated with the waste of time and material in the rapid assignments of officers; the expense of training large numbers of officers as generalists in order to find the relatively few generalists that are really needed; the waste inherent in the whole promotion system, particularly in the efforts made to quantify competence and achieve the needed visibility; the cost of maintaining the two-class officer/enlisted system; the isolation, inbreeding, and concern for the superficial that often result in poor decisions; and the lack of genuine self-criticism. The overall effectiveness of our system of authoritative determination does create a moral obligation to obey the authoritative decisions. However, the problems are serious and detract from the effectiveness of our system and hence from the strength of the moral obligation to obey.

Some unfairness does occur in our system of authority (e.g., in the promotion system, in the two-class officer/enlisted distinction, and in the restriction on personal liberties imposed on members of the armed forces, even in a peacetime situation), but in general our system has achieved a remarkably good record in promoting fair treatment.

Thus, this argument does justify obedience as a means to a very important moral end, at least for those orders that indeed do contribute to the realization of that moral end. Of course, some decisions are more directly connected to the goal than others, and so the obligation to obey based on this justification will vary.

BECAUSE of the various reasons supporting a prima-facie obligation to obey military authority (reasons considered here as well as others), the individual member of the armed forces, in nearly any normal situation, can count on obedience being the morally appropriate response to authoritative decisions. A member can develop the self-discipline required to be an obedient person and obey quickly and confidently in normal situations. But quick obedience is not blind obedience. One's moral sensitivities must be kept alert to the possibility that all is not normal and that disobedience might be required by morality.

One of the reasons that individuals can obey so readily is that they have good grounds for trusting in their superiors and in the political and legal system within which the armed forces operate. Frequently the decision whether to obey will be an extremely difficult moral decision, with little more than suspicion, gossip, or rumor on which to base it. In such situations, if the individual cannot trust his or her superiors and the system within which they function, the best moral decision may well be to disobey. For this reason, if for no other, it is necessary for the armed forces, if they really want their people to obey out of a sense of moral duty, to ensure that the moral character and professional competence of their leaders be absolutely unquestioned. To the extent that we are justified in placing confidence in the moral character

and competence of our leaders, we can resolve doubts about the moral correctness of obedience in a particular situation in favor of obedience.

United States Air Force Academy

Notes

1. Cf. Brian M. Barry, *Political Argument* (New York, 1965), pp. 84 ff.
2. Ibid.

Appendix
Common Arguments for Obedience

One will be punished or at least not rewarded if he does not obey.

While this may be true and may sometimes provide sufficient reason (on teleological grounds) for complying with orders or regulations, nonetheless, it provides grounds only for compliance (not obedience) and only in those instances where the disobedience will be noted. We are more interested in an obedience based on the authority of the superior than in a compliance due to the superior's ability to give rewards and punishments. We are interested in a moral obligation to obey even when no rewards or punishments are involved and when disobedience will not even be noted.

One should obey because most of the time the authority is right.

Alternatively, one should obey when the authority is right. Here the problem is that such compliance is based on the moral acceptability or desirability of the commanded action rather than on authority. Furthermore, it says nothing about an obligation to obey an order that commands something which is otherwise neutral or something that is one of several alternatives when it is difficult to determine which

alternative is best. Even when the commanded action is prima-facie right, the prima-facie obligation to perform the act is strengthened if there is an independent prima-facie reason to obey.

One should obey because the authority has more experience, better judgment, more knowledge of the situation, etc.

This argument focuses on the fact that an authority usually is also an expert. Thus we could accept the authority/expert's judgment for the same reasons that we would accept any expert's judgment. While this reasoning might be sufficient for compliance, nonetheless, it is not concerned with obeying an authority because he is the authority. Furthermore, an authority is often not an expert relative to some subordinates.

One should obey because the authority has been fairly elected, duly appointed, or is otherwise entitled to be an authority.

The thinking in this argument suggests that since it is right that the individual be an authority, it must be right that he or she be obeyed. However, this argument, too, is misleading. In the first place, it might be that in some instances we should disobey even a legitimate authority; at a minimum, the relation between the superior's being a legitimate authority and the subordinate's obligation to obey needs to be established. In the second place, an authority is not always entitled to be an authority. The position might have been gained through bribery, cheating, walking all over others on the way to the top, etc. Nonetheless, we might still have an obligation to obey this authority. In the third place, some legitimate authorities' commands might generate an obligation to obey while others might not. In short, something besides legitimacy is needed in order to generate a moral obligation to obey.

AIR DOCTRINE

echoes from abroad

COLONEL FRANCESCO MAZZEI
ITALIAN AIR FORCE

THE reissuing of Air Force Manual 1-1, *Functions and Basic Doctrine of the USAF*, 14 February 1979, handsomely illustrated with portraits of military and civilian leaders and other drawings, has stimulated new interest in the subject of air doctrine.

The United States Air Force has symbolized air power since the Second World War and exerts a powerful influence on non-English-speaking countries, comparable to the influence that Italy and France exerted on England during the fifteenth and sixteenth centuries. At that time many foreign words were introduced into English because new words were emerging in specialized and technical fields where the English language was notably weak. *Battalion, bastion, brigade, cavalcade, infantry*, etc., are significant samples. Today, with such terms as *GCI, turbofan, radar, head up display, fly by wire, software, FLIR, Doppler*, etc., it is practically impossible to present a true translation, so that we could say, as did an unknown Renaissance author, "I knowe no other names than are given by strangers, because there are fewe or none at all in our language."

Nobody opposes the easy borrowing of English terms, for the lack of words means lack of study and research, deficiency in industrial production, and, worst of all, want of thought.

The selected bibliography of AFM 1-1 reflects the situation: after due homage to Sun Tzu, Carl von Clausewitz, and Giulio Douhet, and surprising consideration for A. A. Sidorenko, the rest—22 titles—consists of American products. In light of this, one could expect USAF basic doctrine to be the best of the best, the quintessence of knowledge about air warfare. Nevertheless, one senses a diffused feeling of discontent; U.S. airmen seem somewhat dissatisfied with official doctrine in general and with AFM 1-1 in particular. This dissatisfaction was recently reflected in an article by Major Robert C. Ehrhart, who stated:

> As I have suggested, our current use of the term "doctrine" is too inclusive. Rather than providing guidance and rationale, this conglomeration of concepts, principles, practices, and policies confuses, then exasperates, and finally drives Air Force people to ignore doctrine. . . . The Air Force must put more emphasis on doctrine. It

should be, after all, the foundation for everything the Air Force does. . . . Doctrine must be valid, sound, and well-grounded. It must, in short, be true.[1]

As I see it, Major Ehrhart, like many of my students, makes three mistakes: First they claim too much for doctrine; second, they do not grasp the substantial difference between an official document and a well-written book; and third, they confuse military strategy with doctrine.

The diffused yearning for an ultimate military doctrine springs from the proliferation of military schools and academies—a phenomenon encountered worldwide, since the Napoleonic era, when armies assumed their modern form.

The systematic study of battles and campaigns bore the ripe fruit of Clausewitz and his successors and introduced to military people and scholars a desire to classify military operations and warfare in general after the fashion of scientists in the search for permanent and universal laws. To have these laws and principles clearly expressed, sound, well grounded, and *true* has always been the unstated wish of teachers of doctrine in military schools. Unfortunately, we have to recognize that the weight of circumstances on warfare makes every battle absolutely unrepeatable so that the value of experience, in light of changing weather and terrain, development of opposing armaments, and wide variations in men and commanders, imposes its own limitations.

We shall always be confronted with the charge that generals tend to fight wars in ways that would have permitted victory in the previous war, when they formed their experience but which is absolutely inadequate in the present situation.

Doctrine is valid and sound only insofar as it reflects and is congruent with cultural background and insofar as it is not limited to axioms, principles, and well-written statements. Otherwise doctrine can easily mislead with dangerous consequences.

In AFM 1-1 the statement on Theater Conventional Warfare, "the first objective of theater forces is to achieve national objectives using the lowest appropriate level of force," probably refers to the dangers of an unwanted escalation. But measuring this statement against the *principle of economy of force* gives one a very good excuse for using only eight helicopters in the ill-fated Iranian rescue mission. Will operational research ever be able to quantify the word *appropriate* for certain? In Israeli doctrine, *economy of force* means to end a conflict in the shortest period and with a mostly clear victory, regardless of quantity of force employed.

A second point regards the scant appeal that formal statements of doctrine have for air force

personnel. This is not merely a USAF problem; it appears to be the same worldwide. It is hardly surprising, then, that USAF's AFM 1-1 or NATO's ATP-33 or the Soviet *Officer's Handbook* are so frequently considered boring and even repelling. These are official documents. Every sentence is not the product of a scholar or a gifted writer, rather the outcome of a series of bureaucratic compromises. There is no passion, no heart or heat in these manuals, and, consequently, few will ever read official doctrine with pleasure.

Compare these two passages, one by a famous military historian and the second from an Air Force manual:

> Adjust your end to your means. In determining your object, clear sight and cool calculation should prevail. It is folly "to bite off more than you can chew", and the beginning of military wisdom is a sense of what is possible. So learn to face facts while still preserving faith: there will be ample need for faith—the faith that can achieve the apparently impossible—when action begins. Confidence is like the current in a battery; avoid exhausting it in a vain effort—and remember that your own continued confidence will be of no avail if the cells of your battery, the men upon whom you depend, have been run down.[2]

> Objective. The fundamental principle in the conduct of war is to define the objective. This, and subordinate objectives at all levels of command, must be clearly understood. After the objective is defined, priorities must be established and action taken to attain that objective. The subordinate objectives and all related aerospace operations and activities must contribute to attaining the overall objective. This will avoid dissipation of limited resources in unproductive ways. Military objectives and the resulting use of force must support the political objectives of the NCA. Commanders at all levels must make sure that their efforts are focused on the assigned objective.[3]

The difference in style is clear. In the second passage the word *objective* appears ten times, and the result is a cloying feeling of satiety.

A last point regards the confusion between doctrine and strategy. Air doctrine is a set of fundamental principles designed to provide guidance for the employment of air power in air operations to attain established objectives.

Strategy, at any level, is a course of action adopted and pursued for the sake of expediency. Doctrine considers the employment of force and points out the best ways to employ it. Governments, when formulating policy or undertaking military actions, must adapt their actions to internal and international conditions. Sometimes they are constrained to choose a course of action, in employing force or in the threat of employing forces, which clashes with doctrinal principles. The Vietnam War offers many instances to illustrate this point.

Doctrine should never try to justify policy. For example, AFM 1-1 dated 28 September 1971 posits conventional warfare with adjacent sanctuary, yet the evidence from experience, dating back to the Greek communist guerrilla actions in 1945-49, had demonstrated that if you allow the enemy to escape and rest in sanctuaries, you will never be able to achieve victory.

But in AFM 1-1 dated 15 January 1975, the American policy of disengagement is pointedly expressed:

> Subtheater and Localized Conflicts. . . . (a) Although the rapid deployment capabilities of US forces are substantial, the US goal is to diminish the need for such deployments in the future by helping its allies build their own military capabilities against localized aggression. . . .

But today, when the need for such deployments is politically attractive, you reaffirm your ability to resupply allies and insert forces directly into a combat area, which builds confidence and stability. The 1979 AFM 1-1 builds up the apotheosis of deterrence, which is not doctrine but a political strategy toward the superpower counterpart in a situation of nuclear standoff.

BETWEEN the two opposed poles, those who claim truth and perfection from doctrine and those who disregard it as useless theory—Winston Churchill was one of the latter—as reasonable people, we would prefer to take our stand in the middle. Even if doctrine has

many limitations, it is a most valuable component in the education of staff officers and commanders; it fosters professionalism and stimulates military thought. If nothing more, such doctrinal debates stir up the silent dust at war colleges.

Florence, Italy

Notes

1. Major Robert C. Ehrhart. "Some Thoughts on Air Force Doctrine." *Air University Review*. March-April 1980, p. 36.
2. B. H. Liddell Hart. *The Strategy of Indirect Approach* (London, 1946).
3. Air Force Manual 1-1, 14 February 1979, United States Air Force.

Many useful lessons have been learned from recent military conflicts such as Vietnam and the Middle East—and I think especially as far as the principles of air power are concerned . . . we must be cautious in applying these lessons to Europe. Our air forces face a strong and sophisticated threat in a highly industrial urban environment where adverse weather is the rule rather than the exception. Our air operations will be much different therefore from those conducted over sparsely populated desert or jungle areas. Furthermore, we know that we will need to fight hard to establish a favourable air situation.

Lieutenant-General Ernst-Dieter Bernhard
"The Changing Operational Environment"
Air Power in the Next Generation (1979)

MORE ON "DO MORE WITH LESS"

Major Richard Szafranski, USAF

AN article, "The Do-More-With-Less Syndrome," by Captain Kenneth C. Stoehrmann in the November-December 1980 issue of the *Review*, strikes a discordant note for me. My response is not intended as a defense of the cliché but rather to justify the big idea peeping around the edges of that slick little do-more-with-less camouflage. A view counter to Captain Stoehrmann's deserves to be heard.

To begin with, the military is not a business, and its organizational entities are not "production units." Ours is a profession providing a service that can be variously characterized as "defense," "security," or "deterrence." The lexicon of business management and related pseudosciences, devoid of these words, has only in the last decade invaded the vocabulary of our profession. Although the armed forces are not engaged in the production of capital and operate on principles radically different from those of business, it has become fashionable to use market jargon in awkward attempts to describe military processes and procedures. There is nothing wrong with this "newspeak" unless the verbal symbols used denote or connote ideas that alter the real thing or activity being described. Thus, a crew on nuclear alert does not produce a fixed amount of deterrence, it *is* deterrence.

Just as our profession is not a business, so our bosses are not managers--they are *leaders*. Managers are process superintendents who see resources transformed into capital-producing products for a profit. We do not make widgets, we serve. While business consultants and organizational theorists decry the manager who "liquidates human assets" to increase or sustain output, we cannot make that complaint. Our profession is founded on the commitment to provide our service even if we are

liquidated in the process. Because of this commitment, our leaders, squadrons, and officers should never be denigrated as managers, production units, and workers.

When I recall that 28,851 United States Marines were killed on the eight square miles of Iwo Jima, I grimace in the expectation that some manager will glibly assert "that wasn't a cost-effective allocation of resources." I am concerned that some of our peacetime force, alarmed as it seems to be by overtime and the heat or cold of offices, will be found wanting if ever put to a similar test.

The test is yet to come. However, in my opinion, we can measure our adequacy in advance by gauging our ability and willingness to accept the big idea I referred to earlier. That idea is posed as a question: "Are we willing to spend ourselves meeting the objectives with which we are tasked, no matter the sacrifice?" Our adequacy is measured by our answer.

If we are not and if we would rather hold back some of our precious "selves," we are in the wrong profession. If we would lie or cheat to meet or pretend to meet the symbolic objectives of peacetime, then again we are not wanted. A profession dependent on honor, courage, and self-sacrifice has mechanisms to deal with liars, cowards, and slackers.

Certainly we could efficiently employ more resources of all kinds, and certainly many of our problems could be solved by throwing money at them. But, like every other competitor for resources, the military has learned that all concrete resources are scarce and expensive. In the military, however, our leaders have an edge on managers. Leaders know and command that unquantifiable essence that managers only suspect exists, human will. Anyone who doubts that people can pit their wills against statistically insurmountable odds and overcome them has not led people. This is what our leaders have been trying to coax from us. What we can and should give them in return is not some banal academic formula postulating that one-plus-one is always and only equal to two, but that one-plus-one can equal whatever we will it to equal by sacrificing a little more self while still preserving our honor. And we can do it safely and without any reduction in quality, if we want to.

I believe that we need to go back to basics, to the fundamental truths that have held us together and make us the formidable force we have been, are, and will be. We have all the guts, energy, and integrity we need. We are fighters, not trades-people. We need to get away from all the slick analyses that explain why honeybees cannot fly and admit to ourselves (grudgingly, perhaps) that we can hack it. This force has more "more" in it than statistics can describe.

Offutt Air Force Base, Nebraska

Major Richard Szafranski is Aide to the Commander in Chief, Strategic Air Command.

air
force
review

IT'S JUST A CHART ON THE WALL

COLONEL RONALD L. BARKER

A reflective reading of history will show that no man ever rose to military greatness who could not convince his troops that he put them first, above all else.

GENERAL MAXWELL D. TAYLOR

Every thought is for the welfare of his men, consistent with the accomplishment of his mission.

GENERAL MATTHEW B. RIDGWAY

D URING the drawdown of forces in Southeast Asia in 1975, returning organizations, airplanes, and people were scattered to as many places as there are points on the compass. My new wing commander in the States had some good news and some bad news for me. The good news was that I would be able to retain command of the fighter squadron I had in Thailand; the bad news—it would be at least two months before there would be any people to command because previous squadron members had all been reassigned. So there I was with the greatest job in the Air Force, and a modern, fully equipped squadron building, a boxcar full of memorabilia, outdated publications, and office supplies.

I wandered the halls for several days, strolled in and out of empty briefing rooms, made some meager attempts to sort some of the junk that had returned from Korat, and generally reaffirmed just how useless a commander can be without a command. Then it occurred to me that I had an opportunity to do something few commanders ever get to do. I had inherited

a squadron whose designation, patch, and history were established; but because it was not a functioning unit, its procedures, policies, and personality had not yet been formed. Here was a fresh lump of clay to be molded into the form of my choosing.

I suspect that like most others who have aspired to command, there were many changes that I would like to make. I had been a student of the command/leadership/management debate since my university days, and in the preceding nineteen years of active duty, I had been in some pretty good outfits and some pretty bad ones. This time I would get it right or have only myself to blame.

Suddenly that big empty building became a very exciting place for me. Pushing aside the assortment of trophies on my desk, I took out a plain pad of yellow paper to develop a plan of attack. Where to begin? Start with the easy stuff. What did I already know about the squadron? Well, the number and type of aircraft were known, and the mission of the squadron was taken right out of the book. These facts in turn determined the number and types of people that would be assigned. Airplanes, mission, people — obviously I needed an organizational chart so I could visualize the internal relationships and scope of the operation. From there I could get on to those innovative and dynamic changes I had been conjuring up. This would be a piece of cake; after all, *its just a chart on the wall.*

Wars are fought and won by men, not weapons; in the last analysis it is the knowledge and courage of the men who fight and the officers who lead them that wins victories. Take care of your men first, last, and always.
Revista Militar (Brazil)

But such was not to be, and after more than five years I am still chewing on that piece of cake. What was the problem? I had seen hundreds of squadron charts. Simply start with the small rectangle at the top, put my name inside, and fill out the rest of the pyramid. I did just that, and at first it looked pretty good.

Then, as a finishing touch, I decided to add a mission statement to the chart as a reminder to all viewers just what we were all about. Obviously, the mission statement went directly across the top as the most important priority in the squadron.

I guess it was at about this time that I began to question just what an organization chart was supposed to show. One management book indicated that the chart should be "the arrangement of personnel for facilitating the accomplishment of some agreed on purpose through allocation of functions and responsibilities."[1] Another source stated that "the formal organization is the official picture of how the organization is or should be structured."[2] Great, but I wanted our official picture to show, if possible, not only the relationships between each element but also the relative importance. The mission statement across the top was a good start. So, what next? Who, within the squadron, actually converted those words into combat capability? Surely the aircrews who fly the airplanes are closer to the mission than the commander. So, I put them next: A, B, C, and D flights directly under the mission. As I worked my way farther along this logic path, it became apparent that I was turning the entire classic organizational pyramid upside down!

The capacity of soldiers for absorbing punishment and enduring privations is almost inexhaustible so long as they believe they are getting a square deal, that their commanders are looking out for them, and that their own accomplishments are understood and appreciated.
GENERAL DWIGHT D. EISENHOWER

TO illustrate how this looked on paper, let me use as an example the 86th Tactical Fighter Group (86TFG), which I later commanded. My tactical fighter group was made up of only those units directly associated with flight-line operations, i.e., maintenance, operations, and airfield management. It did not include any of the behind-the-line support functions such as security, services, supply,

etc. We truly had a "fly and fight" mission. To accomplish this, the TFG was provided basically with airplanes, people, facilities, and an airfield. Responsibilities within the group were roughly as outlined below.

Delivering quality, properly configured aircraft on time was the task of the three maintenance squadrons: aircraft generation squadron (AGS), component repair squadron (CRS), and equipment maintenance squadron (EMS). Their commanders were responsible to the deputy commander for maintenance (DCM). Monitoring the status of the airfield and all of its associated equipment was the job of the base operations/airfield management folks who worked for the chief of operations and training (O&T). The aircrews who did the actual flying and fighting were assigned to one of the four tactical fighter squadrons, whose commanders reported to the deputy commander for operations (DO). The DCM, chief of O&T, and the DO were in turn responsible directly to me. The results, in a simplified format, looked like the inverted pyramid seen in Figure 1.

As an aviator and something of a renegade anyway, I was not particularly bothered by this topsy-turvy triangle. Like a good fighter aircraft, if the parts are properly arranged and connected, it should fly just as well inverted as it
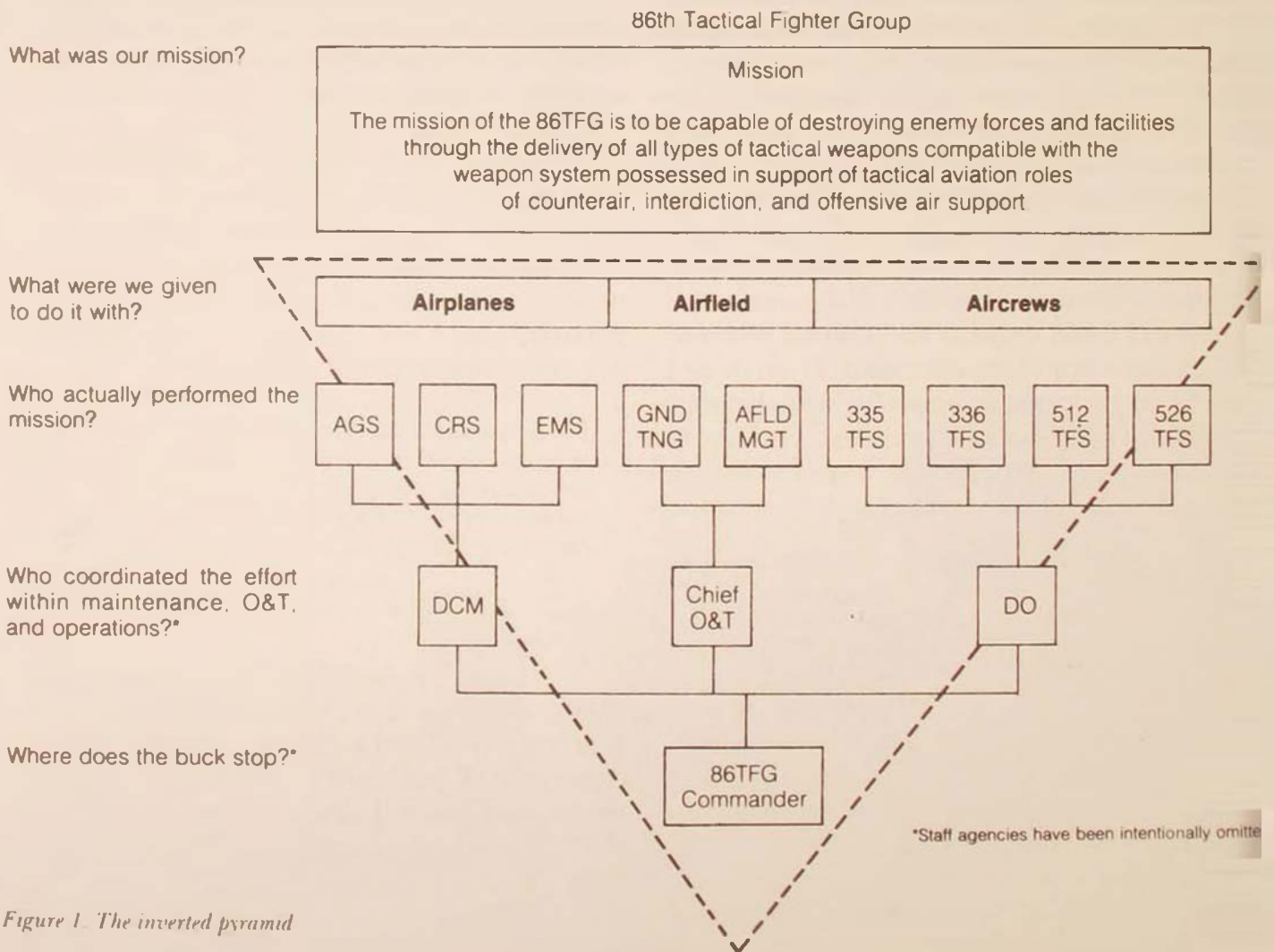

Figure 1. The inverted pyramid

does right side up. I also got a certain amount of demonic pleasure thinking about the impact this would have on the patron saints of management. Would they ever accept the notion that I was looking for aggressive young officers who were willing to "*descend* the ladder of success" and "work their way *down*" to a place in "*bottom* management"?

Anyway, I went ahead with the idea and found that the more I worked with it, the more it fascinated me. One of the most interesting things that happened was that people who normally imagined themselves to be at the bottom of the totem pole were elevated to a very high place in the organization. That young crew chief and aircrew, who always found their little organization rectangle smack at the bottom of the pyramid, were now very close to the top. Why? Because they were the ones out there in the trenches, getting the job done and making that mission statement a reality. Think of the impact this had when I briefed the new troops, showing them where they fit in. Their initial perspective of how important they were in their commander's eyes had a lasting impact on their attitude on the job.

And what could be more timely? Our military services are struggling to recruit and retain quality people in the service of their country — not just to do a job but to serve. Are they important to us? No, they are indispensable. What harm could possibly come from putting them first?

Well, my inverted pyramid and empty building were eventually filled. And even though blood rushed to people's heads when they first studied the strange chart on my wall, the squadron did well. Since then, I have commanded a combat support group and, as I already described, a tactical fighter group, each involving a thousand people or more. Shortly after each change-of-command ceremony, I would rearrange the organizational chart: mission first, then my people, and then me. The concept has served me well even in these larger units.

If a leader will take care of the people—provide support, motivation, discipline, and communication—the people will take care of the mission.

ROBERT D. GAYLOR
Chief Master Sergeant of the Air Force

NOW, I will be the first to admit that from an engineering standpoint an inverted pyramid would not appear to be a very stable structure. Yet, when viewed from an organizational perspective, some very interesting leadership and management concepts can be explored.

First, with a pyramid constructed in this fashion, the pressure would be greatest at the bottom. No hard working, dedicated commander worth his or her salt would argue with that.

Even more important, if the organization is to be properly oriented, it must remain in perfect balance. But, after all, is it not the job of the commander to provide that balance? For example, to enable the folks in maintenance to have the highest possible in-commission rates, they would prefer to keep the airplanes on the ground; that way they could keep them all in commission. Conversely, aircrews never like to stand a bird down for maintenance. Or, to cite a nonmilitary example in the business of producing and selling widgets, the sales department would like to offer many sizes and colors to their customers while the production department knows that one size and one color would be the most economical to build. The commander or manager must ensure that the proper balance is selected to achieve the unit's objective.

The commander's balancing act would obviously be easier if the bottom of the pyramid were not too narrow—that's where the commander is. General Henry Knox once commented, "Officers can never act with confidence until they are masters of their profession." How broad a base does the commander have? Does the commander have expertise in all areas across the top of the chart? What kind of education, training, and leadership

experience does the commander bring to the organization? What degree of integrity and physical and moral strength does the commander possess? A well-qualified leader has a broad personal base of experience, knowledge, and strength of character to rely on. The commander, then, constitutes the first level of balance.

Organizational equilibrium is further enhanced if the middle managers or intermediate commanders understand each other's contributions and problems and if they work well together. If the deputy commander for maintenance and the deputy commander for operations have worked out a schedule between them that provides the proper balance of flying time and maintenance time, or if the widget production and sales managers have agreed on a suitable product mix, the organizations remain in balance with little or no help from the boss. Under ideal conditions the commander can — by establishing realistic objectives, educating and supporting his subordinate commanders, and delegating the appropriate authority — work himself or herself right out of a job. The more nearly perfect this lateral coordination is, the more the pyramid behaves as a trapezoid. The commander can then truly manage by exception and focus more time on such things as long-range planning and com-

municating with the folks at the top (formerly known as the bottom). See Figure 2.

We must also recognize all the dotted and dashed lines of communication and coordination that are an inevitable part of any organization. There are also the informal or covert organizations that never appear on the formal chart and all those individual interpersonal relationships that contribute to the unit's corporate personality. Some of these factors tend to pull a unit together, and some will tend to push it apart. Commanders must be acutely aware of these forces and their positive or negative contribution to the unit's equilibrium. The result can be a closely knit, highly motivated team or merely a divided, apathetic collection of people who happen to work in the same place.

In larger, more complex organizations, the commander will probably need additional balancing aids. This support is usually obtained by adding staff agencies where needed. Staff functions may be needed to provide technical or professional advice, such as lawyers or chaplains; activities such as personnel or finance are added at the staff level because they provide service to the entire organization; and still others are merely an extension of the commander, who cannot be everywhere all the time. My advice in choosing this staff would be to select

Figure 2. The trapezoid effect
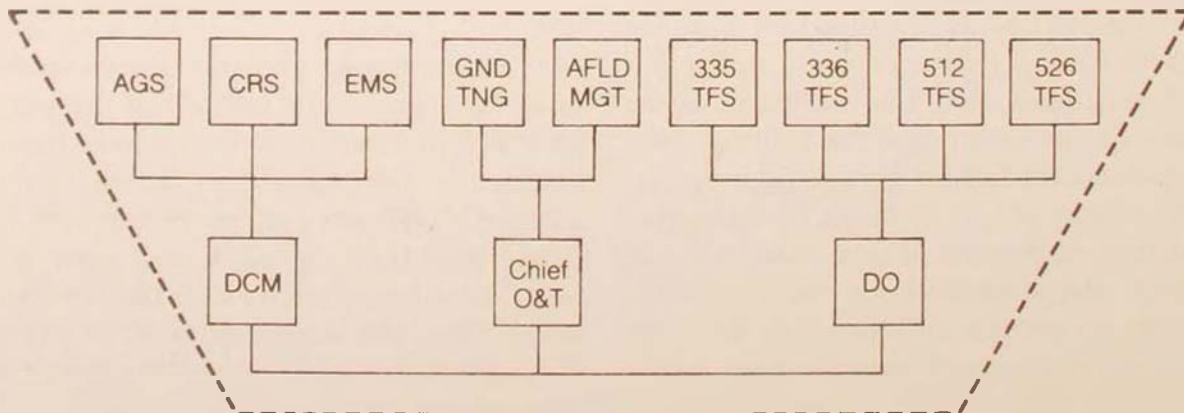
it as you would select a balancing pole for a highwire act. Make it only long or broad enough to provide the necessary balance and make it as light as possible so that it does not contribute significantly to your burden.

I AM still chewing on this one, but the more I study it, the better perspective it has given me about command and leadership. While this approach may not work for all commanders or managers, I would challenge you to see if it would affect any of the leadership or management hang-ups you have been struggling with. Perhaps in a world where *up* is normally considered good and *down* is seldom the preferred direction, we will not find leaders willing to work their tails off to get to the bottom. An event nearly 2000 years old may be worth considering:

And so they arrived at Capernaum. When they were settled in the house where they were to stay he asked them, "What were you discussing out on the road?" But they were ashamed to answer, for they had been arguing about which of them was the greatest! He sat down and called them around him and said, "Anyone wanting to be the greatest must be the least — the servant of all!"

Mark 9:33-35
The Living Bible

Perhaps someday I will be convinced that upside down pyramids just won't work. But I do know for sure that I will never again believe that "it's just a chart on the wall."

Fort Leavenworth, Kansas

Notes

1. John M. Gaus, Leonard D. White, and Marshall E. Dimock, *The Frontiers of Public Administration* (Chicago, 1936), pp. 26-44.
2. Fred R. Brown, editor, *Management: Concepts and Practice* (Washington, Industrial College of the Armed Forces, 1967), p. 18.

Master's Degree in Military Science Offered

To the Editor:

I very much enjoyed reading Captain Frederick G. Beisser's "Comment" entitled "On Strategic Planning" in your March-April issue. However, he and you are in error on page 81 with the assertion that there are no institutions offering the master's degree in military science.

The fact is that the U.S. Army Command and General Staff College at Fort Leavenworth, Kansas, has had a Master of Military Art and Science program since 1964 and accredited by the North Central Association of Colleges and Schools since 1976. Since its inception, the program, to date the only one of its kind, has led to the award of more than 500 master's degrees, more than 100 of them to Air Force officers attending the CGSC regular course. The college is very pleased with the program and with the high-quality theses its students produce annually, many of which have centered or touched on strategic planning. The fact that it does not appear in *The College Bluebook* probably reflects the program's availability only to CGSC officer students and not to the general public which the *Bluebook* aims to serve.

Philip J. Brookes
Director, Graduate Degree Programs
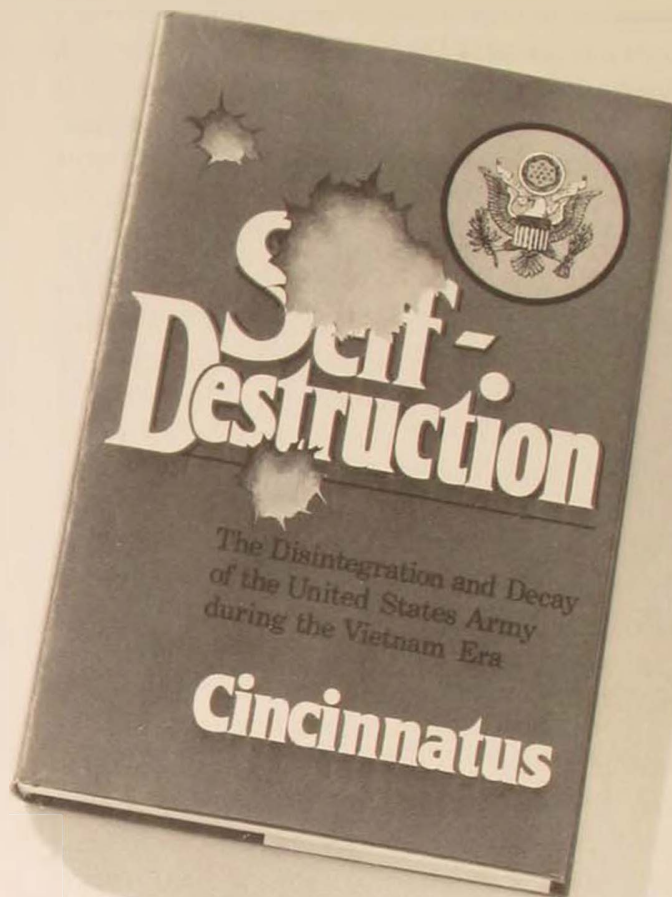U.S. Army Command and General Staff College

books and ideas

CINCINNATUS INSIDE OUT: PART 1

Major Richard A. Gabriel, USAR

THE much-discussed book *Self-Destruction*† describes the failures of the United States Army in the Vietnam War and examines much of the Army's conduct during that war. Purported to have been written by a senior serving officer, the book cites a damning list of failures ranging from the major strategic errors of Westmoreland to the basic ignorance of tactics and troop leadership shown by commanders.*

Self-Destruction is an indictment of the Army as a profession. Cincinnatus rests his case on examples of report falsifications, blatant fabrications, other massacres in addition to My Lai, corruption at all levels, poor quality officers, personnel turbulence, drug use, assassinations, racial conflicts, AWOLs, mutinies, low cohesion, and rampant careerism that were the result of the Army's own policies and practices and not the result of either the "unique character" of the war or the lack of homefront support. The list of sins is long, and, I feel, he has made a strong case to show that the ills of the military were caused by its own ineptitude.

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*Major Gabriel did not know the identity of Cincinnatus when he wrote this review; indeed, it was only a few days before going to press that Cincinnatus was revealed to be Lieutenant Colonel Cecil B. Currey, USAR, retired. Although Currey posed as a combat veteran, he never served in Southeast Asia. He is currently reserve mobilized as a chaplain.

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†Cincinnatus, *Self-Destruction: The Disintegration and Decay of the United States Army during the Vietnam Era* (New York: W. W. Norton, 1981, $15.95), 288 pages.

Cincinnatus, like Hauser and Gabriel and Savage earlier, attacks an institution he loves to make the Army aware and to help head off further calamity. All those critics were hopeful that the Army would be amenable to accepting solutions, mostly to no avail. But Cincinnatus's courageous work is worth the effort even though it may do more good than those previous efforts.

The facts presented in *Self-Destruction* are beyond dispute. The author's case is airtight. Indeed, corporate suicide occurred in such magnitude that now, almost ten years after Vietnam, enough *official* material has seeped from within the Army to demonstrate beyond a doubt that the Army did in fact "self-destruct."

If the book has a flaw at all, it is in the author's failure to press the analysis of *why* the Army self-destructed. Cincinnatus knows in his gut that the stab-in-the-back theory of Westmoreland and others is wrong; and he knows the notion that "tying the hands of the military" by civilian leaders is what caused the Army's problems is also bankrupt. The author implies that the fundamental structure and values of the Army since 1960—modeled, as they are, after the business corporation and riddled with entrepreneurial values that enshrine self-interest and pursuit of career as the highest goals—are rotten and corrupt. It is, I feel, the system that corrupts those who serve it; it is the system that forces out the best and rewards only the sycophants. The Army does not realize that military organizations premised on economic assumptions and driven by entrepreneurial values cannot produce effective combat cohesion. Such systems do in fact corrupt the human values and responsibilities on which unit cohesion, leadership, and ultimate sacrifice are based.

The suggestions that Cincinnatus makes for reform, as a consequence, are naive and unworkable. He suggests the creation of an "institutional memory" for the Army in which computerized reports and analysis of past military situations would be made available to future military planners to help them avoid mistakes in analogous situations. He also suggests the creation of a sense of ethics and a formal code, taught by the Army Chaplain Corps. These measures would help in the short-term but are not *real* solutions. Cincinnatus believes in his heart that the Army wants to change and is capable of reforming itself. Unfortunately, he forgets that the present system served well the archetypes it generated, those military managers and careerists who rode the Vietnam tide to the top. There are too few honest men among them. To reform the Army now from within is to ask those who prospered by that corrupt system to repudiate their own careers and values, their very personal histories. I do not think it will be done by them.

Finally, the book remains silent on a major question: Have any of the institutional forces that produced the rot in the Army during Vietnam been changed in any way? My answer is that they have not and remain with us still. One cannot, I feel, honestly point to a single major institutional reform in the Army, since Vietnam, designed to correct its documented deficiencies. Men who dare tell the truth, like Cincinnatus, must do so anonymously, to avoid the severe retribution of the very system they love and honor.

Cincinnatus has written a powerful book, one that should be used widely at the Army's staff and combat schools.

Saint Anselm College
Manchester, New Hampshire

CINCINNATUS INSIDE OUT: PART 2

COLONEL ALAN GROPMAN

THE pseudonymous book *Self-Destruction* is so warped and distorted that it will not achieve its objective. That goal, according to Cincinnatus in several cloaked interviews he has given, is to reform the United States Army so that the next time it is confronted with an insurgency it fights properly and wins. There is abundant food for thought in this book, but Cincinnatus has made so much of the meal unpalatable for its intended diners, the leaders of the Army, that they will probably not eat any of it.

Although all of Cincinnatus's main points have been made before, it is not clear to him that the root causes of the defeat in Vietnam have been fully explored, understood, and remedied. Thus, he must reiterate them. Cincinnatus asserts that the Army's massive application of firepower showed that the military leadership paid insufficient attention to the uniquely political aspects of insurgency. Cincinnatus condemns the politically corrosive uses of free-fire zones, harassing and interdiction fire, defoliation, search and destroy with the emphasis on the latter, the repeated use of indiscriminate artillery in civilian areas, regular harassment of noncombatants, and the bombing of strategically insignificant targets in both North and South Vietnam. In other words, he indicts the use of the grand tactic of attrition. Pacification, not killing, was the obvious and untried key to victory, Cincinnatus argues.

The author also cites the uniformed military for not dissenting from policies of which they disapproved. Many high-ranking soldiers vigorously complained after the war that they disagreed with the tactics, programs, and policies forced on them by civilians in Washington, yet no high-ranking general ever resigned his commission to draw attention to the disagreement.

Cincinnatus is also outraged by the overt racism of U.S. soldiers. Excessive brutality, he claims, was common, and this was both morally reprehensible and counterproductive. The author blames this evil on the uniformed leadership's use of the "body-count." That statistical indicator led to the "gook syndrome," which led to men killing "indiscriminately in order to swell a tally sheet in some higher headquarters." The entire abuse of statistics to indicate progress is heavily criticized by Cincinnatus. "Honorable officers," he writes, "were placed in situations where they had to compromise their word, their honor, and their oaths of office."

The collapse of honor led to torture, murder, and stunning tragedies such as My Lai, and then the cover-ups. Scandal and corruption at all levels were rife, Cincinnatus argues. He drags out the dismal record of malingering, combat refusals, AWOLs, desertions, drug abuse, and worst of all, fraggings.

Cincinnatus lays these ills at the feet of the senior officer corps. Repeatedly, he cites examples of "morale corroding" careerism, emphasizing excessive decorations for officers and the frequent improprieties in awarding them, the misuse of the officer efficiency report, and the harmful effects of the up-or-out officer personnel management system. Cincinnatus believes these defects led to the destruction of trust between officers and the willingness of many of them to sacrifice the well-being of their subordinates for their own advancement.

WHERE did the Army go wrong? Cincinnatus claims the sole cause of the disaster came from the Army's adoption of U.S. business-managerial techniques. He vilifies General Maxwell Taylor as the individual who all but destroyed the Army by introducing entrepreneurial values to the combat force. Cincinnatus

may be correct in citing the adoption of the wrong set of values for putting the Army on the failure track, but he is superficial and unprofessional in citing one uniformed individual—and an authentic war hero at that—for sending the Army in that direction.

Cincinnatus quotes not a single example of entrepreneurial policies Taylor promulgated as either Army Chief of Staff or Chairman of the Joint Chiefs. Why just Taylor and not the succession of Defense Secretaries from American big business, other Chiefs, and other Chairmen? Why does he not cite the difficulties of maintaining a large force in a prolonged period of peace in a democracy? There lies the institutional problem.

Cincinnatus's other pariah is General William Westmoreland. No slur seems too low, and nearly all of the Vietnam combat disasters are laid on Westmoreland's ignorance of revolutionary warfare. He and the rest of the Army's leadership were guilty, according to Cincinnatus, of actions that were "little short of criminal negligence." The disaster in Vietnam, Cincinnatus argues, grew solely out of gross "ineptitude at the top," and no home front political or social turbulence contributed to the disaster.

Certainly an objective account of the succession of combat refusals, desertions, and fraggings would have to deal with the changed perception of the war after Lyndon Johnson's withdrawal from the election campaign of 1968 and Richard Nixon's subsequent election. Of this Cincinnatus is silent. While the war through 1968 had not been popular, the AWOL, desertion, and other rates of decay were lower in the Army up through that year—with the in-country component at its peak—than they had been in the last patriotic war this country had fought, World War II. The Vietnam War was really several wars with distinctive watersheds. After mid-1968 came unmistakable signs of disengagement, such as peace talks, troop withdrawals, orders from the leadership to minimize American casualties, Vietnamization, and even American citizens—some of whom were

former cabinet members—traveling to Hanoi cloathed in mea culpas. The American people were impatient and fed up with the war, and this tone was transmitted to the soldier, who understandably had no desire to be the last American to die in Vietnam.

Not only does Cincinnatus overlook this evidence, he fails to mention the effects on morale of the utterly inequitable and ignoble conscription system. The Army in Vietnam was not representative of the American people; it was an Army of the poor and disadvantaged, heavy with minorities. Taylor, Westmoreland, and the Army leadership certainly did not advocate a draft whose unlucky and unfortunate products they were supposed to mold into a combat force, fighting an objectiveless war 12,000 miles from home. Cincinnatus is more than just superficial in attributing simple causes for complex effects.

The author contends that the politicians bear no responsibility, asserting that the military has hidden for too long behind a claim of "political softness." But that is not the major military complaint; it is, rather, political control down to the tactical level. Robert McNamara earns only two index entries and is treated as a bit player in Cincinnatus's drama, and Dean Rusk, McGeorge Bundy, and W. W. Rostow are not given even walk-on parts. When Cincinnatus complains of the use of statistical indicators, he should give some thought to the analytically minded civilians that McNamara brought into the Defense Department. He offers no evidence that the Army introduced or favored the body-count. Furthermore, he rails against the Army's "zero-defects" program, but the Army did not create it. On the contrary, it is a quality-control methodology used in industry and utterly out of place when forced on the military.

Cincinnatus's inconsistency is almost as stunning as his shallowness and bias. He criticizes the military for its failures but notes that the Army never lost a major battle. He condemns Maxwell Taylor's attempts to provide service

members with language training, but indicts the Army for its inability to train its people to speak or read Vietnamese. He attests that the Army did not "understand the need for pacification. . . . It relied too heavily on technology and the lavish use of firepower. . . ." Yet he quotes approvingly from Robert Taber's *The War of the Flea* (1965):

> There is only one means of defeating an insurgent people who will not surrender, and that is extermination. There is only one way to control a territory that harbours resistance, and that is to turn it into a desert. Where these means cannot, for whatever reason, be used, the war is lost.

Cincinnatus, furthermore, must stand guilty of shabby scholarship. On the book's dust jacket, he is advertised as a Ph.D. in History, but his notes and bibliography are padded. Although there are 33 pages of notes, most of the sources that specifically document his assertions are secondary. Worse, Cincinnatus footnotes the unnecessary—such as citing Genesis, chapter and verse, for "Am I my brother's keeper?"—but leaves undocumented some critical passages. Here are several that will stand for many:

- "As early as the end of 1961 . . . twenty-two American generals had found berths for themselves [in South Vietnam]." This is evidence of Careerism, writes Cincinnatus, but it goes undocumented and is erroneous.
- "Disengagement," Cincinnatus argues, was possible in 1961, but the Army insisted that "its warriors could bring the insurgency in Vietnam to a rapid defeat. . . ." No documents for that assertion, no quotes from any Army leader accompany that passage, and it flies in the face of the evidence cited in *The Pentagon Papers, The Best and the Brightest,* and *The Irony of Vietnam.*
- "Heroes," writes Cincinnatus, "were awarded high medals for acts of 'valor' performed while they were so spaced out on drugs that they had no idea what they were doing." Possibly true, but the author cites not a single example or document.
- "According to some reports, troops of the

101st Air Mobile Division offered a reward of $10,000 for the assassination of the officer who gave them the order to attack the meat grinder in the Au Shau valley, Ap Bia." But the author gives the reader no clue as to where to find such reports.

- "For the year 1969, the Army admitted to at least two hundred documented fraggings," and more in 1970. Perhaps, but Cincinnatus does not cite the Army's admission.
- "The CIA supported" the Vietnamese political power structure "by protecting Vietnamese officials' poppy fields and flying their heroin out of the country on Air America planes." No sources for that serious allegation either.

Also as disconcerting is the author's misuse of documents. He quotes several times from Robert W. Komer's 1972 Rand Report *Bureaucracy Does Its Thing: Institutional Constraints on US-GVN Performance in Vietnam,* obviously using Komer as an authority, but he distorts Komer's judgments. Komer writes mainly about the failures of the civilian apparatus in Saigon. His major criticisms are saved for the U.S. State Department and the Agency for International Development (AID), although Komer is also quite critical of the Army. Cincinnatus, in his attempt to garner authority for his single-minded condemnation takes a paragraph in which Komer indicts both State and AID for not critically examining their performance and substitutes the phrase "Green Machine" (which is to be nowhere found in the Komer passage) for the civilian bureaucracies Komer is condemning. Similarly, Cincinnatus argues that "army managers failed to get vitally needed information that the war was not progressing as they so desperately wanted to believe. Komer concurs." But reading the page cited from Komer indicates that he was referring mainly to civilians in the Defense/State/AID/Vietnamese apparatuses. Cincinnatus may in fact be correct, but the use of Komer as authority is illegitimate.

Cincinnatus's military historical judgment is

also lacking. He lays the French defeat at Dien Bien Phu in 1954 to the French use of American ideas and equipment, but no serious historian has ever claimed that, and Cincinnatus makes no attempt to prove his assertion. He argues that insurgents must "raise and equip a standing army and win some battles" in order to succeed. He cites as evidence Fidel Castro's success in Cuba. But Castro did nothing of the kind and won Cuba by default as the Fulgencio Batista regime collapsed from within once President Dwight Eisenhower indicated that the United States would no longer support the Cuban dictator. Castro's only successful venture from the hills was his victory march into a vacated Havana. Cincinnatus implies that Army generals favored the use of strategic hamlets (SH) in Vietnam, but he cites no evidence. In fact SH was a bad idea that had worked elsewhere under vastly different circumstances and was imposed on the Vietnamese by civilians. Cincinnatus asserts that the Air Force "enthusiastically" supported Lyndon Johnson's air war against North Vietnam, but nothing could be further from the truth. The Air Force detested the limitations on equipment and targets and the stifling control from Washington. The author argues that bombing was indefensible both tactically and strategically because it did not contribute to military success. It was in fact counterproductive, writes Cincinnatus, and for evidence he cites an antiwar British observer who noted that the 1966 bombing "welded" the North Vietnamese together unshakably. The truth is elsewhere: While North Vietnamese morale was not appreciably weakened by the pinprick raids permitted the Air Force and Navy in 1966, it was almost shattered by the Linebacker campaigns in the 1970s. But of the effect of these later campaigns on the Hanoi spirit, Cincinnatus writes not a word.

ALL of these defects, especially the selective use of evidence and blatant bias, wreak major harm on *Self-Destruction*. Cincinnatus claims in interviews that he only wants reform, but his failings as a scholar and historian will ensure that it will not start with his book.

Fort McNair
Washington, D.C.

MILITARY REFORM: PAST AND PRESENT

LIEUTENANT COLONEL WALTER KROSS

THIS book is not just another one of many on defense.† James Fallow's *National Defense* is part of a plan to reorder the U.S. military fundamentally. By necessity, therefore, Fallows's work must be reviewed in a broader context: as part of the efforts of a small group of well-placed civilian analysts who want to recast the United States military in their preferred mold.

A nation's military is almost always in need of reform. In the past, reform usually came the hard way: the result of resounding defeat on the battlefield or social upheaval on the

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† James Fallows, *National Defense* (New York: Random House, 1981, $12.95), 205 pages.

home front. The U.S. military—indeed, the nation's defense establishment—is no exception.

There are two forms of contemporary military reform. Orthodox reform is well under way within the Department of Defense (DOD), impelled by the Reagan administration. The promised changes are orderly, evolutionary, and relate primarily to the two major management tools of DOD: the Planning-Programming-Budgeting System and the Weapon Acquisition Process. The success of these incremental changes remains uncertain: Even if the alterations take hold, cost analysts of the Office of Management and Budget will maintain more control over Air Force flying hours than does the Chief of Staff. Congressional staffers still will have more influence on pay and benefits than does the Secretary of Defense.

A second, more militarily pertinent reform movement is being fostered by a tight-knit, dedicated group of about a dozen defense critics called The Reformers.* Their professed purpose is to change U.S. military strategy, planning, tactics, and force structure in order to fight and win a modern theater war. They would markedly alter the way DOD prepares for war, establish significantly different warfighting concepts and attendant force structure, and change the way weapons are developed and procured. Their motivation is simple: they are patriots who believe the United States will lose the next war unless their ideas are adopted.

The Reformers' assertions and recommendations appear very compelling, but are they valid? Is the movement sincere, or is it simply an attempt by a few bureaucrats to force their ideas on the military?

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* They chose the name "Reformers" themselves. The group is small but well placed: a few staffers in the Office of the Secretary of Defense, one in OMB, a few in Congress, several consultants, a few think-tank intellectuals, and, of course, a few journalists, Fallows being the most prominent. Their combat experience is virtually nil, even including combat training experience. The Reformers mostly quote and footnote themselves, the same one dozen experts.

The Network

The Reformers have an effective network in Washington. They maintain a strong power base within government. From this vantage they hold the services at bay, blocking key programs they oppose—an important tactic in a period of unprecedented inflation. At the same time, the Reformers build their case amidst an environment of general bureaucratic apathy. Good connections both inside and outside of government enable the Reformers to market their views through their Washington network to decision-makers and the public.

The Reformers apply to bureaucratic war the very principles they seek to infuse into the military. This daily struggle is fought on the Reformers' own terms. Their tactics are well timed, designed to keep the services off-balance. Meanwhile, they outmaneuver the services to undermine hard-won programs, usually in a forum where the services have little influence. As a result, a handful of critics is close to precipitating a fundamental change in U.S. military strategy and forces—not because they are necessarily right but because they make their case more persuasively in Congress and in the media than do the military services.

The Basic Creed

These defense critics have survived through several administrations. Last spring, their influence grew widespread because they were able to seize upon the major initiative of the Reagan administration: large increases in defense spending. Turning the issue to their advantage, the Reformers argue that blind increases in defense spending will not guarantee greater military capability. Instead, they say more spending could yield even less capability if we continue to buy expensive, complex, vulnerable weapons that are costly to operate. Our military leaders, they assert, are transfixed on a losers' game: attrition warfare.

The Reformers suggest a different approach to modern war. First, military operations should rely on maneuver, deception, decentralized

C³, and exploitation of the enemy's weaknesses. Second, force structure should be recast to emphasize simpler, cheaper, more easily supportable weapons that really work in combat. In this way, the Reformers hold out the promise of more capability for less cost. There it is—more or less—a fiscal aphrodisiac guaranteed to gain widespread support, both inside government and with the public.

The Public Campaign

Enter James Fallows, the media point man for the movement. Two years ago, the Reformers, frustrated for years within DOD, decided to go public with their case. They began to tutor Fallows, Washington editor of *Atlantic Monthly*. In October 1979, Fallows published an article called "Muscle-Bound Superpower," a work laced with the Reformers' creed. *National Defense* is a second-generation expansion of that first effort: more polished, more studied, and a reflection of the many hours he has spent with the Reformers' inner circle.

National Defense has become the centerpiece of the Reformers' public media campaign. The book is supplemented by a constant flow of newspaper and magazine articles, some written by journalists who pick up on the movement. Here, too, Fallows has played a strong role, mainly by presenting monthly excerpts from *National Defense* in *Atlantic Monthly*.

The relationship between Fallows and the Reformers is truly Faustian. He portrays them in a favorable light and carries their case to the public as only a gifted writer can. In return, they provide the seemingly compelling logic and stark examples Fallows needs to vault himself to the apex of defense journalism.

The Inner Circle

The Reformers have been around a long time. Four key members are worth noting. The central figure is retired Air Force Colonel John Boyd. A national asset, in Washington he is a rarity: a man measured by deeds. A former fighter pilot, his pioneer work in applying the theory of energy maneuverability to practical air tactics is still used extensively. More recently, he has analyzed military history in search of a formula for winning wars. His ideas are contained in a masterful four-hour briefing called "Patterns of Conflict." The cornerstone of the Reformers' movement, it should be mandatory viewing for all Air Force officers. Nonetheless, like inventor Thomas Edison, Boyd has good ideas and poor ones. Today, he serves as a consultant to a small OSD office.

If Boyd is the military messiah, then an OSD analyst named Chuck Spinney is his prime disciple. A former Air Force engineering officer, Spinney, too, has a four-hour briefing. Using tacair as the prime example, this briefing is a boundless indictment of the military's fixation with oversophisticated, overcomplex weaponry. Entitled "Defense Facts of Life," it is the most publicized work of the Reformers. If Boyd's work is the Rosetta Stone, then Spinney's is the *National Enquirer*—about as accurate and just as out of context. Nonetheless, the briefing gets high marks from those unfamiliar with the tactical air forces and their missions.

The third important member of the Reformers is Pierre Sprey, the bureaucrat emeritus of the movement. A former DOD analyst, Sprey is well known as an uncompromising maverick. His long-standing connections in Washington open many doors for the Reformers. Sprey and some other Reformers have written a pamphlet entitled, "Reforming the Military," published under the auspices of the Heritage Foundation, a prominent think-tank.

A fourth Reformer has been as much a catalyst as Sprey. He is William Lind, congressional staffer for Senator Gary Hart. Lind, a noted defense critic, facilitates the movement on Capitol Hill.

The Charges

National Defense is a definitive statement of the reasons why the Reformers are gaining

strength. Fallows declares three major themes. First, our national defense is being borne away by theory and is losing touch with facts, historical experience, and common sense. Second, the conduct of war and preparations to avoid it are unique and must be understood on their own terms. And third, the truly urgent military questions have little to do with how much money we spend.

Fallows states his assertions well. They crystallize the important issues confronting the U.S. defense establishment today. These important issues can be distilled into five basic charges:

• the cost of modern weapons is seriously out of control, driven up by a military obsessed with pursuit of high technology;

• the military officer corps has become historically illiterate and relies on oversimplistic attrition warfare as the fundamental approach to strategy and tactics and force structure;

• the officer corps has devolved to the management ethic as the careerist standard;

• the all-volunteer force has separated the military from the mainstream white middle class; and

• the fundamental theology governing the strategic nuclear balance is highly suspect.

In the end, Fallows proposes restoration of the military spartan spirit, procurement of cheaper weapons that work, and encouragement of more skeptical reason in strategic nuclear theology. Above all else, Fallows argues for greater coherence in the way the nation makes its choices for defense.

Fallows—and the Reformers—are on target in several important areas. Most assuredly, the rising cost of weapons must be harnessed, but without harsh penalties in capability. Also, the officer corps could put more emphasis on warfighting leadership and less on management skills. And, the draft seems the only way to interest the white middle class in military service —short of war for a very popular cause.

Yet, in substantiating his basic themes and

charges, Fallows's logic breaks down because his perspective is incomplete. As he proceeds, he displays the naïveté of a defense journalist inexperienced in his subject but intellectually captured by a singular set of unbalanced values. But to many readers, Fallows's one-sidedness is lost amidst his fine turn of phrase, sensational examples, and frequent footnotes. Sadly, Fallows rarely leaves the shallows of investigative journalism.

The Myths

In several crucial ways, Fallows and the Reformers do the military and the public a disservice by creating some myths and perpetuating others.

Myth: Our senior military officers are a cut below their counterparts in other walks of life. Our defense situation reflects the quality of our military leadership. In support, Fallows writes:

> Most of today's generals and admirals are men who got there because they were procurement wizards, or adept at punching their tickets, or careful not to make waves. Simply on a human level, I was struck by how little "edge" most of the generals seemed to have to their characters, how bland most of them seemed, not only in comparison with the captains and colonels beneath them, but also compared to successful men and women in other fields—politicians, doctors, businessmen, teachers, and writers. (p. 122)

Alternative: Fallows and the Reformers display a contempt for military leaders rarely expressed so openly by those largely serving in government. As one who consciously avoided service, Fallows himself cannot indict today's general officers without being openly challenged.

The present general officer corps is more diverse than ever before, a reflection of our many missions and necessary government requirements. Compared to their predecessors, today's officers are better educated. They have been exposed to a wider range of conflict, including three wars. The competing demands on the resources under their control is greater than ever. These officers have experienced,

and been party to, an exponential growth in weapon performance that is well beyond the comprehension of their successors.

Our general officer corps has its share of men whose vision and talent rival the Marshalls and Arnolds and whose warrior spirit equals the Pattons of the past. Only history and circumstance will single them out—not the *Atlantic Monthly.*

Myth: The military wants to quantify everything and tends to ignore decisive factors that cannot be reduced to numbers.

Alternative: This is closely related to the first myth. In the name of civilian control, micromanagement by OSD, OMB, and Congress has slowly pressed the military profession into the bureaucratic mold. Endless reviews by civilian staffs cost time and money. Many officers want to extol the importance of factors like flexibility and shock effect and tactics, but the civilian staffers will not tolerate anything that cannot be quantified. Even the Reformers operating within government will stand repeatedly on analytical grounds to block programs they oppose. C^3 and electronic warfare programs are cases in point. "Paralysis by analysis" has been inflicted from the top. Now it pervades the officer corps. As a result, many uniformed professionals lose initiative, creative drive, and motivation.

Myth: The military is obsessed with attrition war and ignores the value of maneuver to exploit enemy weakness.

Fallows says that ever since the Civil War, our battle strategies have been based on attrition. He says the Soviet Union can endure head-to-head attrition war better than the United States, and we must use a different approach to prevail.

Alternative: This popular charge is more a Reformer tactic than a reality. It makes the military look intellectually rigid, too flat-footed to deal with modern war.

Actually, maneuver is an integral part of modern military planning and operations. Yet it cannot be an end in itself. Maneuver must

set up something else: confusion, delay, disruption, or the high certainty of attrition if you do no cooperate. History includes many examples of smart maneuvers that could not be capitalized on by a Sunday punch. Stonewall Jackson's Shenandoah campaign is a good example.

The Reformers' distrust of technology clouds their vision. They cannot see the major contribution today's weapons make to maneuver strategy and tactics. Theater level flank operations are commonplace. Air power itself is the essence of maneuver in theater-wide operations. Airlift can be a decisive maneuver factor through rapid movement of a small potent force. On the battlefield, covering and trapping operations are a way of life. Air Force close air support is a powerful maneuver element, moving among important battles as needed. Attack helicopters make land armor look static by comparison. Battlefield interdiction operations are designed to disrupt the enemy's building forces, thus weakening, delaying, and even deterring an armored thrust.

Recognizing that we cannot match the Soviets weapon for weapon, our forces place high priority on exploiting enemy weakness. We plan to attack the enemy's central nervous system through counter-C^3, defense suppression, and special operations. The Reformers oppose many service programs that support modern military maneuver.

Myth: History proves that increased defense spending will not be available. The military should recognize this fact of life. In support, Fallows states that defense spending has been held to a narrow range since the Eisenhower era: $125 billion, plus or minus $10 billion (1980 dollars).

Alternative: Fiscal fatalism is a dangerous, self-fulfilling prophecy. In fact, spending exceeded the high limit in eleven of those years. As a percent of GNP, defense spending has decreased from about nine to five percent. Since 1970, the Soviets have outspent us by $300 billion. Their spending exceeded ours by

50 percent in 1980 alone. The defense increases proposed by President Reagan do not close this gap but only hold it constant.

There is a chicken-egg concept here. Many of the maladies cited by the Reformers are actually the result of the meager fiscal commitment of the 1970s in the face of growing requirements. This crunch posed unacceptable choices—especially in tacair. In the early 1970s, Air Force leaders knew we had to modernize our 1950s/'60s vintage fighter force worn out by Vietnam. But there was not enough money for both modernization and full readiness. The decision was made to modernize first, then restore full readiness. Then unforeseen and unprecedented inflation hit the readiness accounts hard. To hedge against uncertainty, modernization was slowed, but readiness was not substantially increased. The result was higher aircraft procurement costs and low spare-parts inventories. Pay and benefits began to lag inflation, causing good people to leave and others not to join. About this time, the Reformers began to exploit the condition, which reached a nadir in early 1980. Since then, the defense increases of 1981 and 1982 have dramatically helped modernization rates, readiness accounts, and pay.

Myth: Only the Reformers can interpret history correctly. The officer corps is historically illiterate.

Alternative: The Reformers see what they want to see in history. They ignore historical lessons of weather, sound offensive counterair and electronic warfare operations, and a balanced quality/quantity force structure. Fortunately for the Israelis in 1967 and 1973, they did not misinterpret history.

The Reformers venerate General Heinz Guderian because he put a radio and a radio operator in each German tank in 1940. Yet they oppose modern equivalents of this important action. Had they been on the German General Staff in 1935, they might have accused Guderian of being fixated on overcentralization and high technology. In his book, Fallows uses

a chart to illustrate the futility of modern military C^3, but the chart has fewer nodes and links than any small business in America.

Myth: History shows that numbers are the dominant factor in air combat.

Alternative: The power of Colonel Boyd's tactical insights notwithstanding, the most decisive factor in air combat in Korea may well have been the quality built into the F-86. Its hydraulic controls enabled the F-86 to change combat maneuvers faster—the origin and heart of Boyd's theories — than the MiG-15, which had only manual wire and rod controls.

Other factors are important. In Korea we achieved a 10 to 1 kill ratio by fighting over neutral territory near the range limit of the MiG. We fought against a backward nation probably too far out in front of itself in technology with the MiG-15 and ground radar. In Korea, we were not numerically dominant, but the qualitative superiority of our pilots gave us a considerable edge.

By contrast, in World War II and Vietnam we achieved only a 2 to 1 kill ratio. We were numerically dominant, posing many targets to an enemy who chose his battles carefully. Most important, we carried the fight to the enemy's heartland, into his GCI/ground defense/interceptor net. Perhaps these factors are as important as numbers. Korea is not the simple base line it seems.

Myth: Air Combat Evaluation/Air Intercept and Missile Evaluation (ACEVAL/AIMVAL) is the true predictor for modern air combat, and only the Reformers know how to interpret it.

Alternative: The Air Force and Navy learned more lessons from ACEVAL/AIMVAL than did the Reformers. First, we learned that our current medium-range missile was a handicap to our longer-range shooters, the F-15/F-14s. It was slow, and it drew our best aircraft into visual dogfights unnecessarily. This proved a major disadvantage particularly when faced with a revolutionary, point-and-shoot weapon:

the fast, all-aspect infrared missile. As a result, we initiated the advanced medium range air-to-air missile program to produce a fast launch-and-leave missile for firing beyond visual range. Second, we validated that enemy GCI has to be neutralized. Third, we confirmed how important it is to retain first-shot advantage over a numerically superior enemy. Fourth, we learned the need for new tactics. Fifth, we learned the importance of beyond-visual-range identification. Sixth, we learned the importance of superior pilot skills. Even so, the F-15s and F-14s had a superior exchange ratio to the F-5 in ACEVAL/AIMVAL—a battle fought over neutral territory in clear weather by pilots of equal skill well within range of all aircraft.

The Reformers learned different lessons: buy only cheap, visual dogfighters and abandon the beyond-visual-range air battle as a hopeless concept.

Fallows says that intangible factors are often decisive. He is right, but he ignores some obvious ones. Israeli experience belies the ACEVAL conclusion that, in many air battles, numbers dominate and complex weapons are a handicap. The Israelis have defeated numerically superior enemies, whipping them with U.S. aircraft and missiles that the Reformers oppose. And, at this writing, the F-15 is still undefeated in air combat. In fact, the Israelis have repeatedly beaten air forces which were heavily equipped with the MiG-21, an aircraft almost identical to the Reformers' favorite, the F-5.

The Reformers' overemphasis on ACEVAL/AIMVAL distorts the scope of modern theater war. They would have the public believe that the visual air battle is the decisive activity. It is crucial, but so are other missions. Historically, 90 percent of all aircraft are lost to ground fire. We must prepare well for many missions under many conditions.

Myth: Compared to simpler aircraft of World War II and Korea, today's complex weapons are in a poor state of readiness and are virtually unmaintainable.

Alternative: This is a very large myth, unsup-

ported by combat experience. Sortie rates in World War II, Korea, and Vietnam did not exceed 1.0 sorties per day for any 30-day period. Modern aircraft can sustain higher rates. Last year, the Air Force demonstrated that its two most sophisticated all-weather fighters, the F-111 and F-15, could exceed their planned rates. Despite being limited to partial operations by the host European nations, the F-111 flew twice its wartime rate, and the F-15 averaged more than three sorties daily for two weeks.

Fallows uses a chart to indict F-15 maintainability. Even the old data used showed the F-15 broke down less often and required less manpower than its predecessor, the F-4. The F-15 has continued to mature, and more recent data show the newer F-15C/Ds require about half the maintenance of the F-4E.

Fallows cites Colonel Everest Riccioni's argument that the F-15s are a "phantom fleet," producing only one-tenth the sorties as an equal-cost F-5E force. But his cost figures and sortie rates are debatable. Slight adjustments in the ratios yield an equal number of sorties for both planes. Still, the number of raw sorties per dollar is a poor measure—combat-effective sorties is the goal. The F-5E is a point defense interceptor capable of guarding a small area on a nice day. How useful would it have been in the Battle of the Bulge when air power was crucial? Good weather fighters flew .5-.8 sorties per day in December 1943-June 1944.

Myth: The United States Air Force pursues technology for its own sake to the exclusion of quantity and simplicity.

Alternative: We pursue sophistication when needed for the mission. Our all-weather air-to-air fighter (the F-15) and our all-weather attack aircraft (the F-111) constitute only 19 percent of our fighter force. From 1975 to 1986, we will modernize our force with F-15s, F-16s, and A-10s: about 3000 aircraft. Only about 800 will be F-15s, the rest are simple, basic day-visual fighters. We will selectively modify some of the F-16s and A-10s with extra capability, but only as needed.

Dealing with Reform

These and other myths demonstrate the lack of analytical balance in *National Defense*. That Fallows and the Reformers have gone unchallenged is testimony to both their bureaucratic skill and the apathy of the officer corps.

Still, the Reformers' movement is a fact of life. The military services must deal with it effectively. Otherwise, the military will jeopardize its role in determining strategy, tactics, and force structure within the U.S. defense establishment.

There are some important steps that the military services should take in the face of attempted reform.

- Try to control it. Keep it evolutionary not revolutionary.
- Keep an open mind, evaluate all ideas, and apply the good ones with vigor. Find the common ground and go after it.
- Know how to absorb the unjustified punch. Articulate very clearly the reasons why we do what we do and why some suggestions of the Reformers are counterproductive to the military's mission. Do this in a timely way.
- Establish the means and resources to get a balanced view to decision-makers and the public.
- Tolerate, encourage, and reward the military visionary in the officer corps.

LIKE it or not, *National Defense* is with us. Its controversial nature has generated reactions which vary from reverence to revulsion. In the final analysis, *National Defense* is an important statement of the Reformers' case, and it is receiving wide acclaim. In this sense, it is the most significant book on defense in recent years.

The U.S. defense establishment always needs reform — but in moderation. The fear of many professionals is that these particular Reformers have gone beyond the bounds of moderation in both method and objective. The Reformers might better be called the "Replacers," because they would have the military trade one set of problems for another. In doing so, they pose a serious threat to us all.

Hq USAF

OLD LESSONS WITH NEW BLOOD

MAJOR JOHN HASEK
The Royal Canadian Regiment

IN an *Air University Review* essay, "The Southern Duck Wants to Lie Down," Colonel James Morrison, USA, argued that deep-seated, persistent ignorance was the chief attribute of the Vietnam disaster.[1] I would argue that, in the case of the U.S. military at least, this is a most unjust charge. Rather than ignorance, the chief problem was that the military could not and did not offer unified strategic advice to the President on the conduct of the war. Professional military advice on what may loosely be called military strategy was filtered through too many civilian and political levels within the defense system to retain cohesiveness and meaning, even had any unified thinking been allowed to emerge.

Vietnam has come to be associated with a massive failure of the U.S. military, but from the perspective of a foreign military observer, the only failure seems to have been the inability of the military to conform to that first and most important principle of war: selection and maintenance of the aim. Furthermore, with "an army taking the field: the first care of its commander should be to agree with the head of the state upon the character of the war."[2] This also seems to have been neglected in the Southeast Asian conflict. The chief failure of the military, if it can be called failure, was an inability to project its thinking at a high enough level in the decision-making process.

When I arrived in Vietnam at the end of January 1973, the idea that the war had been lost by the United States and its South Vietnamese clients was so firm in my mind that it took several months and a great deal of evidence to the contrary to change this perception. The written "Agreement on Ending the War and Restoring the Peace in Vietnam,"[3] of which the International Commission for the Control and Supervision of the Cease Fire (ICCS) was a creature, did little to dispel the illusion of the victory of the Communist cause.

To Canadian members of the four-nation ICCS, the very wording of the protocols seemed to confirm that we were off to Vietnam merely as part of an elaborate American face-saving exercise. It was only later, after discovering that the regional team sites in Da Lat, Phan Rang, and Bao Loc and their surrounding areas were still firmly in South Vietnamese hands, that I slowly started to realize the actual situation.

The last American troops, those of the Four Power Joint Military Commission, left sixty days after our arrival. We then expected that the illusion of South Vietnamese control of the situation would become apparent, and the structure would collapse like a pack of cards. The departing Americans reinforced this expectation; some even pressed weapons and ammunition on us to put under our beds, just in case.

These weapons joined the 9 millimeter pistols in our trunks for the remainder of our stay.

There was undoubted sadness among the Vietnamese to see the last of the Americans but certainly no panic or fear among the Army of the Republic of Vietnam (ARVN). A month later, on 1 May, the nightly curfew was lifted for the first time in many years in South Vietnam; this confidence was fully justified.

Meanwhile, I had come to appreciate the fact that my entire region, which extended from the South China Sea to the Cambodian border and included five provinces on the coastal plain and in the central highlands, did not have any regular ARVN formations larger than a battalion and only a couple of those. The entire region was ably controlled by Regional and Popular Forces. The South Vietnamese claimed that in Region IV they owned all the occupied hamlets and most of the arable land. This was gradually being verified by the Sovereignty patrols carried out by the Canadian members of the ICCS, sometimes accompanied by their Indonesian colleagues. (Hungary and Poland, the Communist members of the ICCS, tried very hard to stop such patrols).

At this time I went deer and fox hunting with the chief of Binh Thuan province. This "hunting" was in fact what we in North America call *jacking* and involved the highly uncomfortable procedure of driving and walking on small jungle paths, which supposedly belonged to the Vietcong, and shining a light to pick out the eyes of the mesmerized antelope and civet cats that passed for deer and foxes and made delightful eating.

Gradually it became apparent that the Vietcong units, now called Provisional Revolutionary Government (PRG) units, in the jungle were filled with North Vietnamese conscripts and that they, together with those units officially listed as North Vietnamese, were in desperate straits. The majority of the ceasefire violations we investigated consisted of futile attacks by such units, easily repelled by the Regional Forces and in some instances only by

Popular Forces. Many of these attacks were attempts at obtaining provisions.

Canada pulled out of the ICCS and went home after six months. The South Vietnamese were even a little sad to see *us* go. Through our "open mouth" policy, we at least tried to inform the press and the world of what was happening, but as we did not really understand the situation ourselves and as the press was not greatly interested, it was a somewhat forlorn effort at best. After that, except for periodic predictions of when the final offensive would come, world attention shifted elsewhere. Yet under Article Seven of the Paris Agreement, the South Vietnamese were still able to maintain their freedom. This article stated in part that:

> The two South Vietnamese parties shall be permitted to make periodic replacement of armaments, munitions and war material which have been destroyed, damaged, worn out or used up after the cease-fire, on the basis of piece-for-piece, of the same characteristics and properties, under the supervision of the Joint Military Commission of the two South Vietnamese parties and of the International Commission of Control and Supervision.[4]

However, successful leftist agitation managed to persuade the U.S. Congress to cut even this last lifeline. From then on it was merely a matter of time—and yet it still took the maturing of two new cohorts of North Vietnamese boys and a two-year resupply effort by the Soviets before the predicted North Vietnamese offensive could begin. Without materiel replacement, without ammunition, and, above all, without friends, the morale of the Army of the Republic of South Vietnam finally cracked, and the North Vietnamese conquest was successful.

WHERE, then, was the American military failure? The U.S. military blunted the strength of the North Vietnamese, and Vietnamized the war just as they had intend-ed. They perhaps failed to communicate to the political leadership and certainly to the opinion makers and public in the United States and in the West what they had done. But more than this, the aim of the war, which presumably had been to prevent the collapse of South Vietnam, changed. The character of the war, never very clear, became lost altogether. The United States did not lose the Vietnamese War, it merely changed its mind. The only loser was South Vietnam, and it did not lose primarily in Southeast Asia but in the minds of U.S. opinion makers and their allies.

In *The Pentagon Papers*[5] and elsewhere, there are indications that various individual U.S. generals warned of the dangers of American involvement in Southeast Asia and attempted to contribute to strategy formulations at other stages of the war. However, no mechanism exists whereby the U.S. military, as a professional body, could formulate strategic advice. The term *general staff* is vague and emotionally loaded, but nevertheless it describes a certain place given to the thinking of the professional officer corps in a society, a function which the U.S. officer corps seems to lack. This gap has been filled to a certain extent by the numerous civilian think tanks, of which the Rand Corporation is the archetype, but it is filled less than adequately and at great cost to the United States. At the heart of the professional officer corps, or in its general staff, the collective memory must exist which, while it may not be able to devise the methods to fight future wars, at least can prevent the relearning of old lessons with new blood. While ideally this collective memory will function at the level of strategy, it should also function at other levels.

The British military have never produced the general staff function in their officer corps either, but the collective memory of the British Army lives down at the regimental level, and it is largely the unwritten traditions that counter the alienation and anomie.[6] It seems that it is not so much that military thought does not exist in the United States; rather, that the end

product is massaged too soon and too often by managerial, political, or bureaucratic hands, and usually the message either gets changed, distorted, or diluted out of existence.

Let me give two arbitrary examples from opposite ends of the problem. First, at the level of strategic thinking. The enmity of the U.S.S.R. for the United States and the Soviet military buildup are both facts of long standing. Yet the strategies built up and discarded around this enmity are as changeable as a spring day. At one time it is the fashion to credit the Soviets with the most benevolent of motives and downgrade the threat and next to look at Soviet strength without accounting for the weaknesses.

Arnaud de Borchgrave of *Newsweek* magazine has charged that Western leaders have long been falling prey to the disinformation spread by the U.S.S.R.[7] This disinformation promotes the idea of the innocence of Soviet intentions. In his speech, de Borchgrave illustrated how hollow were the protestations of peace and goodwill preached by the Soviets. However, at the same time he missed the second, equally strong side of the Soviet propaganda effort, which attempts to create the impression of power, strength, and invincibility of the U.S.S.R. and its unshakable conviction of purpose.

It has become fashionable, in order to demonstrate the danger, to enumerate Soviet successes in the Middle East and Africa without showing the larger list of failures and to point to some of the major events as demonstrating Soviet successes when there is no evidence to show that, in fact, the long-term effect of such events may be extremely negative to the Soviet cause. Western security is similarly challenged by demonstrations of the magnitude of the Soviet military buildup without indication of the growing economic, agricultural, energy, and financial difficulties that accompany this buildup. Even if only the military picture is painted, surely the weaknesses should be shown as well as the strengths. Although this would

not make the situation any less critical, it would at least prevent the possibility of defeatism's replacing the complacency of yesteryear.

Whereas vacillations at the strategic level have led to policy changes that affected the armed forces in an indirect way, the U.S. military forces have bowed to the pressures of fashionable thinking in more direct ways. Major Daniel Jacobowitz warns of the dangers of military disintegration in the face of alienation and increasing permissiveness in the forces. His fears are echoed and demonstrated at a less theoretical level by Captain Samuel J. Barlotta, who shows how some of the prime elements of basic training, those very elements designed to mold the alienated individual into a proud team member, have been eliminated from the training of army recruits.[8]

Indeed, changes must occur and the military must reflect the society it serves, but the changes must be complementary to those in the society at large so that the military can function as a distinctive part of the society. The societal changes must not be merely transferred from the democratic society at large into the nondemocratic sub-society of the military.

That changes had to be made in the forces was well recognized as the Vietnam War came to a close, especially in view of the imposition of a volunteer force on the U.S. Army. An interesting discussion of how some of these changes could be brought about can be seen in an article by Major General Robert G. Gard, Jr., written for an Adelphi Paper of that period.[9] Many of the changes cited by Captain Barlotta as destroying basic training can be traced to the views expressed by General Gard in 1973, yet other ideas in the Adelphi Paper, ideas which would have put the whole into context, have not been effected. Ideas for the general liberalization of the U.S. Army which could be enforced in isolation seem to have been adopted, but some of the complementary changes, which may well have made the whole package work (such as educational benefits for completed service and

some form of GI preference in civil service jobs) have not been acted on.

There is a disturbing feeling of déjà vu in reading Captain Barlotta's article. He has read recent history and quotes from Eugene Kinkead's *In Every War But One*[10] to point to the similarities between the current destruction of military methods in basic training and the liberalization imposed by the reforms following the Doolittle Board Report of the late 1940s. The failure to socialize soldiers to the discipline and order of the army enabled the Chinese Communists to break down group cohesiveness among American POWs, and this in turn led to the breakdown and high fatality rate among individual prisoners in Korea.

It is thought-provoking to see that while Major Jacobowitz is recommending the introduction of tried and true methods of maintaining combat unit cohesiveness such as unit, instead of individual, rotation, the basic training of recruits is instead emphasizing the maintenance and protection of the individuality of the recruit, thereby supporting the alienation and anomie of the troops instead of combating it.

A letter dated 6 August 1979 from the Department of the Army TRADOC Headquarters, on the subject Initial Entry Changing Policies, states in part:

> ● Only stress that directly results from the trainee's performance of tasks will be allowed. The stress will be positive, cumulative, challenging and oriented toward goals that are attainable.
> ● Nonproductive stress created by physical or verbal abuse will be prohibited.
> ● The operative philosophy is to train soldiers by building on their strengths and by shoring up their weaknesses. It is not to "tear them down and build them up again." . . . we will assist the soldiers in attaining these standards.[11]

It is all reminiscent of another generation of young Americans:

> What they lacked couldn't be seen, not until the guns sounded. There is much to military training that seems childish, stultifying, and even

brutal. But one essential part of breaking men into military life is the removal of misfits—and in the service a man is a misfit who cannot obey orders, any orders, and who cannot stand immense and searing mental and physical pressure.

For his own sake and for that of those around him, a man must be prepared for the awful, shrieking moment of truth when he realizes he is all alone on a hill ten thousand miles from home, and that he may be killed in the next second.

The young men of America, from whatever strata, are raised in a permissive society. The increasing alienation of their education from the harsher realities of life makes their reorientation, once enlisted, doubly important.

Prior to 1950, they got no reorientation. They put on the uniform but continued to get by, doing things rather more or less. They had no time for sergeants.[12]

THE periodic semidestruction of its army by the world's greatest power may not seem an unhealthy phenomenon from the perspective of democracy as a whole. However, the dangers posed are probably greater than the seeming benefits. For contempt of the military can reduce the perceived and actual security of the United States to the point where America appears vulnerable to attack. This vulnerability makes the application of nonmilitary power more difficult and costly. Moreover, such perception can, by the pendulum of public opinion, rapidly swing from contempt to jingoistic overreaction and the mobilization and brandishing of awesome strength. World security is ill-served by both ends of the pendulum's swing. When perception of strength is at the ebb, the pinpricks of peripheral attacks all have the germ of escalation in them. While, when the drums are beating loudest and the flags flying proudest, the chances of a desperate attack by a Soviet empire, conscious of its rapid decline and fearful of disintegration, must increase dramatically; especially so when the flags, the drums, and yellow ribbons are still backed only by the promise and not the fact of a massive increase in military capability.

Toronto, Canada

Notes

1. Colonel James L. Morrison, Jr., USA (Ret), "The Southern Duck Wants to Lie Down," *Air University Review*, March-April 1979.

2. Baron Henri de Jomini, *The Art of War* (Philadelphia, 1862), p. 59.

3. "Agreement on Ending the War and Restoring the Peace in Vietnam," signed at the International Conference Centre, Paris, January 27, 1973.

4. Ibid.

5. *The Pentagon Papers*, the Senator Gravel edition (Boston: Beacon Press, 1971).

6. Major Daniel W. Jacobowitz, "Alienation, Anomie, and Combat Effectiveness," *Air University Review*, September-October 1980.

7. Arnaud de Borchgrave, Address to Sea Link 80 at Annapolis, Maryland, 19 June 1980.

8. Captain Samuel J. Barlotta, USA, "Basic Training: The Verge of Destruction," *Military Review*, November 1980.

9. Major General Robert G. Gard, Jr., U.S. Army, *The Future of the Military Profession*, Adelphi Paper No. 103, 1973.

10. Eugene Kinkead, *In Every War But One* (New York, 1959).

11. Barlotta, pp. 49-50.

12. T. R. Fehrenbach, *This Kind of War: A Study in Preparedness* (New York, 1963), pp. 460-61.

SOVIET AEROSPACE FORCES — A SURVEY

Dr. William E. Kelly

THE Soviet Union has become one of the world's most powerful nations in a relatively short period of time. This is due in large part to the Soviet Air Force. For those who would like a basic analysis of its role and structure, the *Soviet Aerospace Handbook†* is a good beginning.

After a brief introduction concerning the Soviet challenge and a call for an awareness of the Soviet military apparatus, Chapter 2 considers the organization of the Soviet Armed Forces. An awareness of the structural differences between the Soviet military apparatus and of the Western countries soon becomes apparent. For example, unlike the traditional organization of the United States military into land, sea, and air forces, the Soviet Armed Forces consist of five distinct services: the Strategic Missile Forces, Ground Forces, National Air Defense Forces, Air Force, and the Navy.

The Strategic Missile Forces constitute the most important service to the Soviet military

and in some respects are comparable to the U.S. Air Force Strategic Air Command. The Ground Forces are identified as being numerically second only to the Army of the People's Republic of China. The National Air Defense Forces are responsible for the strategic defense of the Soviet Union and represent one of the most modern air defense systems in the world. The Soviet Air Force is divided into three separate components, and it has the responsibility for providing tactical support to the Ground Forces, strategic bombing operations, and military airlift support. The Soviet Navy directs all naval forces and is committed to a strategic mission, upgrading its capability for waging general war and projecting Soviet naval power and influence abroad.

Chapter 3, "Soviet Aerospace Forces," deals with the Soviet Air Force, Strategic Missile Forces, National Air Defense Forces, Soviet Naval Aviation, and the Soviet Space Program. It is in this chapter that the Strategic Missile

Forces are identified as the preeminent military service. However, the Soviets have not neglected other components for maximum potential use.

The Soviet Air Force has been delegated the responsibility of carrying out independent operations as well as support missions in conjunction with other branches of the armed forces. It consists of three components: Frontal Aviation, Long-Range Aviation, and Military Transport Aviation. The primary mission of Frontal Aviation is to provide tactical air support. Strategic air defense is a secondary mission. Long-Range Aviation has as its primary mission intercontinental and peripheral strike operations. It is noted that use of the strategic bomber force could follow an initial missile strike against the enemy, or it could be used in conjunction with a missile strike in the performance of a retaliatory blow following an attack on the Soviet Union. Military Transport Aviation is primarily responsible for the transportation of men and materiel during warfare activity or in cases of crisis. For example, the Soviets made use of this command when they airlifted troops and materiel from Cuba to Angola in 1976, demonstrating their capability to bring needed resources over long distances in a short period of time.

Soviet aerospace doctrine is the subject of Chapter 4. Reference is made to the characteristics, capabilities, and employment principles associated with Soviet aerospace forces. In addition, the basic objectives of Soviet military power are identified for the reader. These objectives include: defending the U.S.S.R. against attack, ensuring favorable international conditions for the building of socialism and communism, ensuring reliable defense and security for the entire socialist camp, and providing support to national liberation movements. It is also projected that there will be an increase in the scope and variety of responsibility of the Soviet Air Force because of new technological advances.

Chapter 5, "Selected Readings on Soviet Military Affairs," might prove beneficial to a student who is interested in further study of the Soviet Armed Forces. An abundance of Western sources concerning the Soviet Union is identified for the reader. Soviet sources printed in English are suggested as other sources. In addition, reference is made to Western journals dealing with Soviet affairs, such as *Problems of Communism, Russian Review,* and the *Slavic Review.*

Chapter 6, "Soviet Military Resources," is divided into two main parts: Soviet personnel and Soviet spending. It is noted that 80 percent of the males between the age of 15 and 49 are considered fit for military service. (p. 129) Obviously, this represents a large pool of individuals who potentially may render service to the Soviet Armed Forces. The United States, by contrast, has less than one-half the military strength of that found in the Soviet Union. Since the Soviets hide most of their budgetary accounts for various reasons, it is difficult to ascertain their precise military expenditures. It is noted that although the United States allocates only 6 percent of its gross national product to military expenditures, the Soviets allocate between 13 and 15 percent. (p. 133)

Chapter 7, "Life in the Soviet Air Force," may be the most interesting chapter in the book because it gives the opportunity to compare a U.S. Air Force officer's life-style with that of his counterpart in the Soviet Union. The Soviet officer is well motivated for a variety of reasons. He enjoys privileges extended to only the favorite sons of the regime. The Soviet officer also enjoys precedence over the average citizen in normal, everyday undertakings. However, despite all the privileges enjoyed by a Soviet officer, his life is much more difficult than that of his Western counterpart, and his standard of living is significantly lower than that of a U.S. officer. His success will depend on professional capabilities, loyalty to the party, and attendance at professional military academies.

The work concludes with a list of biographies of Soviet military leaders, which identifies

heir position, past military record, and educational background. It appears, though, that the value of this chapter will become more limited with the passage of time since so many of these military leaders seem to be reaching retirement age. The chapter does, however, have value in that the reader may be able to ascertain some possible characteristics that appear to enhance an individual's rise in the Soviet military structure, for example, prior wartime experience and membership in the Communist party.

THIS work is what it purports to be—namely, a "handbook." It lacks the depth and degree of analysis characteristic of a more scholarly enterprise. Yet, for the novice, it does fulfill its purpose: ". . . to provide basic information on the Soviet Armed Forces—and particularly the Soviet aerospace forces—in order to promote a greater awareness of the Soviet military and its capabilities." (p. 3) However, for more detailed analysis, the reader must look elsewhere and consult other sources.

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Potpourri

Children of Military Families, A Part and Yet Apart by Edna J. Hunter and Stephen D. Nice, editors. Washington: U.S. Government Printing Office, 1978, 188 pages.

Children of Military Families, A Part and Yet Apart is like one of those Red Cross lifesaving films you went to for your own good, *not* because it starred John Wayne or had a memorable plot. *Children of Military Families* makes tedious reading, but the contents are essential and timely.

The book, written by 15 scholars with impressive credentials, is a summary of the papers presented at the Military Family Research Conference in San Diego in September 1977. The editors, both research psychologists at the Naval Health Research Center, have combined 11 papers into a volume that would be useful to military sociologists, child development specialists, psychologists, and those concerned with military family personnel policy.

The book is well documented, covering a broad range of subjects such as family and social role perception of military dependents, child development in a transient father-mother situation, child abuse and neglect, the androgynous wife, and children of culturally mixed marriages.

A statement in the Foreword describes the critical necessity for research of this type:

Interest in these problems has increased with the grow-

ing recognition that the service person's satisfaction with military life is highly related to family satisfaction and family functioning, which in turn are related to on-the-job performance and, ultimately, to the retention decision.

Many problems are enumerated, but I found the book lacking in solutions. All too often the answer was "more research." The potential value of the book would have been higher if the editors had added a summary to each chapter entitled "Implications for the Military Policy Maker." What, for example, should military leadership do with the following pieces of information?

- Children whose parents were absent during the critical years from birth to seven years of age are hindered in later development, and their dependency needs increased.
- Acute child abuse often occurs as a result of stress within the family and in families that are socially isolated.
- The absence of the father may have various impacts on the preschool child's emerging sense of gender identity, his ability to modulate and express aggression, and his role as a child living in a specific family.
- The children of cross-national parents will experience increased social marginality when stationed in the foreign parent's country.

There are some notable exceptions, but generally the book is lacking in practical implications. A final criticism relates to an apparently inherent disease of social researchers, language pollution. For example:

The intent of this chapter has been to focus on adolescence as a time of particular vulnerability to geographic mobility and social discontinuities because of the developmental requirement for intrapsychic transitions

manifested by disengagement from infantile objects.

Now *what* is that supposed to mean? The book has much to say, but it has not adequately bridged the "insight gap" between academic research and practical application.

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Canadian Airmen and the First World War: The Official History of the Royal Canadian Air Force, Volume I by S.F. Wise. Toronto: University of Toronto Press in cooperation with the Department of National Defence, 1980, vi + 771 pages, $35.00.

What's in a title? Often a lot; in this case the word *and* makes the difference. This handsome volume is about Canadian airmen *and* World War I—not Canadian airmen *in* World War I. It is therefore *not* simply a collective biography; rather it is a full-blown analysis of war in the air over the Western Front, the Atlantic, and the Mediterranean—not to mention recruitment and training in Canada, Great Britain, and America.

This, for reasons that say much about Canadian social history, is as it should be: In 1914 most English-speaking Canadians considered themselves simply British subjects, particularly in the social strata from which airmen were recruited, and Canadian airmen were individually and almost invisibly integrated into the Royal Flying Corps (RFC), the Royal Naval Air Service (RNAS) and, ultimately, the Royal Air Force, though, for organizational and political reasons, the much larger Canadian Expeditionary Force retained its national identity as did the Royal Canadian Navy. The story of these airmen cannot be told without recounting the history of Britain's contribution to the air war, which Wise does magnificently.

New insights into the growing pains of air power abound, and many old lessons are illuminated from new perspectives: the contested emergence of dual flight instruction backed up by careful instruction in theory as the dominant pattern of pilot training is carefully analyzed; the vital contribution of air power to the defeat of the submarine menace—largely unappreciated at the time because of the dismal failure of air attacks on U-boats—is spelled out; the awful wastage and inefficiencies arising from the bitter RNAS/RFC rivalry are dispassionately laid out, chapter and verse; the painful nascence of strategic bombing is analyzed with impressive thoroughness and honesty. There are significant reinterpretations as well. Wise argues persuasively that of all the contending armies in August of 1914, only one, the British Expeditionary Force (BEF), was served effectively by its air arm and that the collapse of the Schlieffen Plan and the "Miracle of the Marne"

came about as a direct consequence of RFC reconnaissance. The Commander of the BEF, Sir John French—who has received rough treatment from military historians—shines forth unexpectedly as the only national military commander to employ air reconnaissance competently, believe what it told him, and act on the belief. His personal endorsement and forwarding to the French Command of RFC reports of 5 and 6 September that the German right flank had turned eastward to pass inside Paris marked the turning point of the war.

So much of Wise's book deals with the significant and relatively unfamiliar that his forthright, technically informed, and often colorful descriptions of the air battles over the Western Front became an enjoyable added bonus rather than the central focus of the book.

Complete within its self-imposed limitations, thoroughly researched, well written, competently edited, and handsomely bound and printed (the full color foldout maps are superb), this is perhaps the best single volume on World War I in the air. It is well worth the admittedly high price.

J.F.G

SAC Tanker Operations in the Southeast Asia War by Charles K. Hopkins. Offutt AFB, Nebraska: Hq Strategic Air Command, 1979, 153 pages, $3.62.

Charles Hopkins provides a comprehensive pictorial history of the Strategic Air Command's air refueling operations in Southeast Asia (SEA) from May 1964 to December 1975. Although much of the material can be found in other sources, this book is most informative. It not only brings back fond memories for those who participated in air refueling missions in SEA but also provides an accurate picture of tanker operations.

The narrative starts with the first deployment of six KC-135s on 7 June 1964 from Andersen Air Force Base, Guam, to Clark Air Base, Philippines, under the nickname of Yankee Team Tanker Task Force. The story continues with the Foreign Legion operations from September through December 1964 and finally covers the Young Tiger operations from January 1965 to December 1975.

This chronological treatment includes an accurate description of rendezvous procedures and the location of air refueling tracks and orbits used in SEA. Hopkins discusses in great detail the expansion of air refueling operations to Kadena Air Base, Okinawa, and Ching Chuan Kang Air Base, Taiwan, as well as the activation of numerous bases in Thailand including the largest base at U-Tapao.

The book thoroughly covers air refueling support for fighter operations throughout SEA and also describes the tanker support of the six phases of Bullet Shot, the deploy-

ment of Constant Guard I and II, and Linebacker I and II operations. Support of reconnaissance missions under the nicknames of Combat Apple and Combat Lightning are also discussed. The book closes with the final redeployment of 17 KC-135s from U-Tapao to the United States on 21 December 1975.

Anyone looking for statistical information on air refueling support in SEA can find it quickly and easily in this text or its appendices. One appendix lists all the air refueling units in SEA, the inclusive dates of activation, the location of the units, and their commanders. This book, then, is an excellent source for those interested in air refueling operations in Southeast Asia.

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The Ides of August by Curtis Cate. New York: M. Evans and Company, 1978, 544 pages, $15.00.

The tangled skein of events that led to the building of the Berlin Wall and the crisis that ensued serve as the marrow for this splendid account of one of the uglier historical scars of this century. Relegated to some obscurity by the more dramatic Cuban missile crisis that followed closely, the Berlin Wall nevertheless remains a tangible monument to the cruelty of man and the perversions of his more hideous political and ideological creations.

An extensively researched document, *The Ides of August* is also a touchingly human account of how the wall so profoundly affected the lives of Berliners, East and West. In a style reminiscent of Cornelius Ryan's in *The Last Battle*, Curtis Cate skillfully projects the reader into the unfolding events through the lives of the participants. He also gives an excellent account of the complex reasons behind the apathetic reaction of the Western powers, especially the domestic political constraints in the United States.

This book dispels the notion that reading history in a rather hefty package must be a test of academic endurance. *The Ides of August* is historically accurate, personally intriguing, and delightfully readable.

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Lightning Joe: An Autobiography by J. Lawton Collins. Baton Rouge: Louisiana State University Press, 1979, 444 pages, $20.00.

At first glance, J. Lawton Collins's autobiography appears to be just another in a long series of works by or about twentieth-century generals. In brief, Collins graduated from West Point in 1917 and spent most of the interwar years studying or teaching at a number of service schools. He led the 25th Division for a year in the Pacific war and then commanded the VII Corps during the entire Western European campaign. After the war, he served in Washington, rising to Chief of Staff of the Army between 1949 and 1953. Collins admits he was at the right place at the right time. Actually, he is too modest, for he made much of his luck and the most of his opportunities. Collins was a very able soldier, performing extremely well in all his school, staff, and combat assignments.

But his book is more than just the narrative of a successful career. *Lightning Joe* is notable because Collins writes well and about matters of importance. First of all, he is candid and to the point. Second, Collins shows how his West Point and service school ties and his experience both as a student and instructor played a part in his later career. For this alone, the book is highly recommended, especially for cadets and junior officers. Third, Collins emphasizes leadership. He writes not only as a successful leader but also bluntly tells of the failures and firings, giving names and reasons. In an era dominated by administrators and managers, attention to combat leadership is long overdue. Collins says much in a straightforward and refreshing way.

Coverage of the interwar years and World War II is excellent, but the story trails off badly after 1945. While it is true that Collins has written a good history of the Korean War (*War in Peacetime*, 1969), nevertheless, the last years of his military career are slighted. Since Collins was in high positions during the period of such controversies as unification, integration, and the "Revolt of the Admirals," this is indeed regrettable.

Lightning Joe is recommended for any student of war, leadership, or the U.S. military between 1917 and 1953. Collins writes well and pulls few, if any, punches. Clearly, this book deserves a place alongside those on Marshall, Arnold, Bradley, Eisenhower, MacArthur, and Patton. Collins set a high standard of performance on active duty; he has also set a high standard for military autobiography. Now, if we could only get other generals to take note (especially the airmen!) and write a comparable book, we would all be the richer for it.

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Blood of Spain: An Oral History of the Spanish Civil War by Ronald Fraser. New York: Pantheon Books, 1979, 628 pages, $15.95.

In many ways the Spanish Civil War was an important battle in the ideological warfare that began with the Bolshevik Revolution in 1917 and endures into the decade of the 1980s. Using the device of oral history interviews with more than three hundred surviving participants and witnesses to Spain's intramural tragedy, Ronald Fraser portrays the events of 1936-39 in a vivid, insightful manner.

Fraser, the author of two earlier oral histories on Spanish topics, skillfully interweaves first person accounts with a quite useful narrative without imposing himself needlessly into the story. *Blood of Spain* appears to have no central theme in the traditional sense but rather complements the myriad histories of the conflict by providing a clear understanding of the atmosphere in which the unfortunate events occurred. Emphasis is on the homefront, not the battlefield, although the two frequently overlap as the author carefully constructs his story.

Fraser supplies a detailed chronology of these war years—including contemporaneous international happenings—which facilitates rapid review of the principal events. Readers interested in a lively and readable account of an important milestone in this century of conflict can benefit considerably from this study although its length may make some hesitant to tackle the tale.

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Terrorism: Threat, Reality, Response by Robert Kupperman and Darrell Trent. Stanford, California: Hoover Institution Press, 1979, 450 pages, appendices, notes, bibliography, index, $14.95.

Contemporary terrorism has become a topic as timely as tomorrow's headlines. Robert Kupperman, Chief Scientist of the U.S. Arms Control and Disarmament Agency, and Darrell Trent, Associate Director and Senior Research Fellow at the Hoover Institution of Stanford University, share extensive backgrounds in national security and crisis management at the federal level. They contribute significantly to the growing literature on the subject of terrorism with this comprehensive survey of the technological and management aspects of antiterrorism.

Kupperman and Trent focus on the "hows" of terrorism rather than the "whys." They have phased their book to provide an overview of national policy and technical issues, a brief historical analysis of terrorism, an eye-opening insight into the potential for acts of national disruption, the details of incident management and of the multiple variables that enter into the decision-making process during a crisis, and finally, a review of national and international progress in efforts to combat terrorism. Eight essays on various aspects of terrorism, ranging from the specifics of hostage confrontation and rescue to heuristic modeling of scenarios using rule-based computer systems, supplement the main text.

After placing the phenomenon of terrorism in historical perspective, the authors examine the trends and developments in domestic and transnational terrorism, turning their attention to the potential for and plausibility of acts of mass destruction and national disruption. They paint a frightening picture of the technology that might be available to the industrious terrorist group, including nuclear/chemical weapons and biological agents, and of the vulnerability of critical national resources—the electric power grid, petroleum and natural gas distribution systems, and the computer. To counter the threat, the authors advocate a conceptual framework based on the application of technology and antiterrorism management techniques in the areas of prevention, control, containment, and restoration. The theme that emerges is emphasis on the need for increased awareness of all aspects of the threat and an integrated, rational, optimizing approach at all levels to counter it effectively. Kupperman and Trent argue that the United States is currently poorly prepared to deal with nationally disruptive acts of terrorism. They applaud President Carter's decision to form the Federal Emergency Management Agency as a step in the right direction but contend that much more needs to be done, not only at local and national levels but internationally as well. While the capabilities and destructive potential of the terrorist have become increasingly sophisticated, the science of counterterrorism has remained in its infancy. The authors, writing not as alarmists but as educators and practitioners, contend that it is high time to catch up.

Although there is little direct discussion of the military's role in counterterrorism in the book, selective reading is recommended for interested officers and those who might have a primary role in dealing with terrorist incidents. Chapters dealing with the terrorist's arsenal, security and countermeasure technology, and incident management and appended essays on the role of the media, medical survival, and hostage confrontation and rescue could be val-

uable reference sources for the officer who may someday find himself a player in a terrorist scenario.

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The Plumbat Affair by Elaine Davenport, Paul Eddy, and Peter Gillman. Philadelphia and New York: J. B. Lippincott Company, 1978, 192 pages, $8.95.

Needlessly tiresome in narrative, *The Plumbat Affair* is the story of Israel's purchase of 200 tons of high-grade uranium through fictitious channels in 1968 under the incredulous noses of the European Atomic Energy Commission and other international agencies. The case is finally broken through the sloppy elimination of a Munich-Olympics conspirator by Israeli intelligence. Now the world knows why the U.S.A. came to Israel's aid in 1973—to avoid Israeli weakness and Knesset arguments to use the 200 tons to devastate Egypt and Syria. In this instance, too many authors may have spoiled the broth.

T.M.K.

The Politics of War: The Story of Two Wars Which Altered Forever the Political Life of the American Republic (1890-1920) by Walter Karp. New York: Harper and Row, 1979, 380 pages, $15.00.

Americans have always been fascinated by the specter of conspiracy in American public life. Walter Karp's *The Politics of War* provides another example of such a thesis. The years 1890-1920, Karp contends, must be examined in light of the effect domestic politics and political ambition had on foreign affairs. In examining the events leading to American involvement in the Spanish-American War and World War I, Karp sees "the last great popular struggle in America to maintain a genuinely free republic . . . and the defeat and final obliteration of that struggle in two foreign wars." (p. xiv)

The Republican Party of 1890, led by a small circle of "cynically ambitious men," noted that their hold over the once docile electorate was weakening. The growing political crisis (the emergence of opposition within the party) led these men to turn to a new and broader course of action. According to Secretary of State James G. Blaine, "the party's salvation . . . lay in launching under the Republican aegis a new assertive foreign policy for the United States, one that would put an end to its isolation and place it once and for all in the international arena as a major world power." (p. 11)

Avid for war with anyone, the nation's leaders transformed a foreign quarrel of no consequence to the United States into a major political issue. The man the Republicans chose to implement their "large policy" was William McKinley, described by Karp as "the supreme example of the political wirepuller, the leader who gets things done without ever seeming to lead." (p. 70) McKinley was guided by his determination to forgo a new national unity that would replace loyalty to the American republic with loyalty to the nation.

To gain possessions in the Caribbean was not enough; the United States could scarcely become an active power in the world unless it actually confronted the world's powers. Hence, the seizure of the Philippines during the Spanish-American War would propel the United States into Asia. This would, Karp believes, "entangle the country in international complications of every kind and degree." (p. 113)

The democratic oligarchy cooperated with its republican counterpart because the large policy served their interests also. This reflected a deliberate effort to eliminate electoral competition as the decisive element in the two-party system.

Successful by 1900 of forging a new political order, the Republican Party secured permanent political supremacy with discipline, organization, and wealth over the republican sentiments of the American people. But it did not last because the finance capitalists, who played a key role in managing the nation's economy, were utterly corrupt and lawless. Thus, the "finance capitalists could not manage the economy; they could only prey upon it." (p. 121) The result was the revolt of the American middle classes against political and economic oligarchy.

This led to the Democrats' capture of the presidency with Woodrow Wilson. Wilson, described by Karp as obsessed with the subject of greatness, believed "an active foreign policy . . . would thereby protect American democracy itself from the ignorant masses, meaning all those Americans who did not share . . . Wilson's belief that democracy and the Democratic Party were one and the same thing." (p. 147)

On the subject of American entry into World War I, the author believes Wilson intended, in one way or another, to provoke Germany into providing him with a casus belli. By using questionable actions Wilson ultimately succeeded in maneuvering Germany and the United States into an impossible position. The end result was a war that furthered Wilson's desire to be the greatest statesman in world history.

With the end of the war, the Republican oligarchy

reasserted itself, and through the issue of the League regained control of the presidency. The end result, Karp contends, was the destruction of the republican cause. "Never again would the citizenry of this Republic enter the political arena determined to overthrow oligarchy . . . , to extirpate private power and eliminate special privilege." (p. 343)

The book, Karp's second to deal with American politics (his first was *Indispensable Enemies: The Politics of Misrule in America,* 1973), offers an interesting explanation of the American political process. As a professional journalist, he writes in an easily read style with footnotes to document his argument. Anyone desiring a stimulating interpretation of a facet of American history that still casts a shadow on the present will do well to consider this book in their search for a clearer understanding of the past.

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Naval Power in Soviet Policy edited by Paul J. Murphy. Washington: Government Printing Office, 1978 (published under the auspices of the United States Air Force), 341 pages.

"Our country has built a modern navy and sent it out into the ocean in order to support our own state interests and to reliably defend us from attack from the vast ocean sectors." With that statement by Admiral of the Fleet of the Soviet Union, Sergey Gorshkov, Paul J. Murphy begins his study *Naval Power in Soviet Policy.*

Murphy, a military and political affairs analyst with the United States Air Force, has assembled an impressive list of contributors to his book, all of whom present detailed and provocative analyses of the book's premise.

The early chapters give an in-depth analysis of the origins of Soviet naval thought. The work of Admiral S. G. Gorshkov is analyzed, and interesting relationships and comparisons are explored to substantiate present Soviet naval development. The following chapters discuss naval shipbuilding programs and weapon system employment. Noteworthy is a chapter on naval antiship and surface-to-air missile systems. The final chapters present case studies of Soviet naval deployment.

Murphy's book can be used as reference material by any serious student of Soviet affairs. However, its complexity and the large amounts of data presented preclude casual reading of the book.

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In Peace and War: Interpretations of American Naval History, 1775-1978 by Kenneth J. Hagan, editor. Westport, Connecticut: Greenwood Press, 1978, 368 pages, $17.50.

In Peace and War is not the type of book that landlubbers might refer to as trumpet-and-drum history. Although a history of the American Navy, it is essentially interpretive. Battles are discussed, but they are given a severely circumscribed role throughout most of the book. Technology, strategy-making, and international affairs are more prominently discussed.

Seventeen authors have contributed to this book, which is structured as a series of chronologically arranged essays. The multiple authorship leads to some repetition, particularly at the beginning of each chapter, but editor Kenneth Hagan, a professor of history at the United States Naval Academy who has himself written extensively on naval and diplomatic history, has generally been successful in imposing unity on the book and in holding the contributions to about twenty pages each. Most of the authors will be familiar to students of American naval history: David F. Long, Geoffrey Smith, Ronald Spector, David Trask, and Dean Allard are among the more prominent. Each writes about that period of naval history for which he has established a scholarly reputation.

Smith, for instance, has written a thoughtful chapter on the Navy of the 1840s and 1850s. Calling this era one of "Uncertain Passage," Smith shows that the Navy made administrative gains with the advent of the bureau system and limited technological advances with the adaptation of some of John Dahlgren's improved ordnance designs and John Ericsson's screw propeller. The Navy was also deeply involved in several major explorations, notably Charles Wilkes's global expedition of 1838-42, yet essentially remained small, backward, and little appreciated by most Americans.

The theme of uncertainty might also be applied to Lawrence Korb's thoughtful contribution on recent naval history. Marshaling his statistics convincingly, Korb shows how dramatic the buildup of the Soviet Navy has been during the past decade. Although the United States still maintains technological superiority in many areas and a lead in overall naval tonnage, Korb questions whether this represents meaningful superiority. The Soviets lead in antiship missiles, have integrated their naval, maritime, and hydrographic fleets, and while behind in tonnage figures, have a large margin in the number of commissioned ships. The influence of Admiral Hyman Rickover in the Department of Energy and

with Congress has led the United States to build a few large nuclear-powered surface ships at the expense of conventional escort and destroyer types. Korb expresses serious misgivings about this policy and argues that while nuclear power may be best in submarines and carriers, smaller ships might better be conventionally powered; he would like the Navy to have more cruisers and destroyers. "Any U.S. superiority is marginal at best," Korb concludes.

These are but two of the many thoughtful essays included in the book. *In Peace and War* will be provocative reading to many. A feature that will also have utilitarian value is the inclusion of a select bibliography of some two dozen titles at the end of each chapter.

Dr. Lloyd J. Graybar
Eastern Kentucky University, Richmond

Rickenbacker's Luck: An American Life by Finis Farr. Boston: Houghton Mifflin Co., 1979, 366 pages, $12.95.

Finis Farr's portrait of Captain Eddie Rickenbacker is painted without warts or imperfections. As a result, our knowledge of America's World War I Ace of Aces remains rather superficial. When an author omits the flaws we get a distorted view of the subject's real character as well as the influences of the era in which he lived. Rickenbacker was a self-made man of strong convictions, living proof of the Horatio Alger legend in America. Captain Eddie was a famous war hero, race driver, aviator, and business tycoon. Because he made it on his own, he had little time for liberal philosophies. The author hints that Rickenbacker was a racist, an opportunist, and an antiunionist but fails to develop these themes. His life spanned the era of America's rise to world power, and many of his personal values represented attitudes common in the United States before the coming of New Deal socialism.

Farr's book provides a readable survey of a twentieth-century American hero.

Lieutenant Colonel Pat O. Clifton, USAF
Kelly Air Force Base, Texas

Soviet Naval Strategy for the Eighties by Commander Steve F. Kime, USN. Washington: National Defense University, National Security Affairs Monograph 78-3, June 1978, 25 pages.

"What kind of navy is it and where is it going in the 1980s?" asks Commander Steve Kime. He an-

swers those two questions with clarity and perspective.

Commander Kime, a member of the faculty of the National Defense University Research Directorate, briefly assesses factors affecting Soviet naval development. A major factor was the navy's position in its quest for resource competition with the marshals, which forces naval development to be expressed in terms of strategic offensive and defensive roles. The heart of the monograph, however, is an assessment of Soviet naval credibility and a naval profile, both expressed in complementary charts. They show, according to the author, an impressive force but one with limited combat credibility skewed toward the extremes of the spectrum of conflict— the display of naval power and all-out nuclear war.

The booklet contains the usual charts on numbers of ships, types, missions, etc. It takes an unambiguous look toward the turn of the century and concludes that (1) the Soviet naval forces of today in type, number, and mission will essentially be present through the eighties; (2) qualitative upgrading does not appear to have the potential to alter the character of the present force; and (3) it is unlikely that the Soviet Navy could break out of its current profile before the end of the century. The Soviet Navy is a serious challenge, he finds, but one that the West can cope with.

Commander Kime's monograph is clear, concise, and eminently readable; it only takes a short hour. It should be required reading for every officer genuinely concerned with our national defense.

Lieutenant Colonel Wolfgang Samuel, USAF
Hq USAF

Is Britain Dying? Perspectives on the Current Crisis edited by Isaac Kramnick. Ithaca, New York: Cornell University Press, 1979, 286 pages, $15.00.

Is Britain Dying? is a collection of fifteen essays originally presented at a Cornell University conference in April 1978, sponsored by the Western Societies Program of the Center for International Studies. Like the conference, the book is an expression of concern.

Once the very model of a modern major power— stable, rich, and smug—Britain now appears beset continually by political and economic instability and by civil unrest and disorder. Whether and how one perceives a crisis in modern Britain is, it seems from these observations, very much a function of one's politics. The conventional left sees a crisis and blames the bankers, managers, and class system. The right sees the crisis and indicts unions, socialism, and intellectuals. Margaret Thatcher's victory settled lit-

tle in either direction or in between. As the decade of the seventies came to an end, many observers in this cluster were still asking, "What's wrong with Britain?"

Although highly repetitive, much of the material here is redeemed by a fine sense of humor. These people know how to talk, and the written word catches their splendid conversational quality. Edward Heath, Barbara Castle, Robin Marris, Tom Nairn, Stephen Blank, Peter Stansky, and all the others do a noble job of cutting the ideational grass over some pretty thorny turf. Using such topics as "The Heath Years," "Lies and Damn Lies" of Britain's economic problems, "Women and Equality in Britain," and "The Americanization of British Politics," these discussants lift up the past, the present, and the future and conclude that Britain can and probably will survive but, not too surprisingly, because of an increasing revolution from the right, not the left. Ultimately, the feeling one gets is that, if nothing else will save "dear ol' England" and keep her going, the ability to laugh will do it. The audience at the conference must have had a grand time and enjoyed the show immensely.

As for the book's objective—to encourage informed, spritely, realistic, yet optimistic thought—the target is hit several times squarely in the bull's eye. (Pun intended.) Existential as well as political questions are asked, and some pragmatic answers are structured. These aspects make the collection worth studying, especially by military personnel who may be stationed in England. The reader who enjoys a light touch will find challenges for thought and perhaps even action.

Dr. Porter J. Crow
West Palm Beach, Florida

Conquest of the Skies: A History of Commercial Aviation in America by Carl Solberg. Boston: Little Brown and Co., 1979, 413 pages + index, $14.95.

Conquest of the Skies is the definitive description of how the airplane, airplane engines, and airlines came into being and developed into what is now known as commercial aviation. Carl Solberg's treatment of the subject is easily read and hard to stop reading.

Aviation trivia lovers will enjoy this book. It details how the Wright brothers learned to turn their aircraft from studying buzzards and discloses that Glenn Curtiss did not invent the aileron; instead an Englishman patented the idea in 1868. Clearly plot-

ted are the interrelationships among the early aviation pioneers in the fields of aircraft design and engines and selling aviation to the public. It puts into perspective Lindbergh's feat as much more than a stunt, showing it as a critical occurrence in the public's awareness of aviation.

Of importance to a military reader are the beginnings and original partnership of military and commercial aviation making vivid their interdependence.

Solberg makes it clear that from the military and commercial aviation partnership came many great advances in aviation. For the military aviator who deals with the Federal Aviation Agency or the Civil Aeronautics Board, or any civilian fliers, the book carries an unmistakable and illuminating message. The Air Force still profits from commercial aviation, as evidenced by the KC-10, the KC-135, the E-3A, and E-4A aircraft. For the civilian aviator, the book's message is no less pointed.

Any serious aviator as well as anyone concerned with the associated control, regulation, maintenance, and development in either sector of aviation should read *Conquest of the Skies.* By an understanding of this story, the necessary cooperation of civilian and military aviation can be enhanced by gaining an appreciation for the large common ground on which both are based.

Captain L. Parker Temple, USAF
Luke AFB, Arizona

The Battle for Guadalcanal by Brigadier General Samuel B. Griffith II, USMC (Ret). Annapolis: The Nautical and Aviation Publishing Company of America, second edition, 1979, 282 pages, $15.95.

The Battle for Guadalcanal reversed the defensive status of the United States in World War II. This offensive operation represented the largest Marine landing force assembled up to that time. Not only was the terrain hostile but the bravery and competence of the Japanese soldier on Guadalcanal, many who had fought extensively before in Manchuria and China, predicted a long, tough struggle. Brigadier General Samuel Griffith's one-volume study of this initial offensive operation belongs on the shelves of anyone seriously interested in World War II Pacific Ocean operations.

General Griffith, who in August 1942 was assigned to the aggressive 1st Marine Raider Battalion, has provided a detailed study that includes untapped sources as well as interviews with Japanese participants. Sections relating to the purpose, decisions,

preparations, invasions, and successful conclusion of the battle are well presented. Shortcomings in experience, planning, and coordination—U.S. as well as Japanese—are all documented. In some instances, blame for negligent actions or inaction is implied while in others jailing was recommended. Some of the Japanese committed hara-kiri. In the battle narratives, Japanese tenacity is balanced against the superior resolution of the Marines, and later, the Army. Sea battles in the waters around Guadalcanal are depicted as an essential part of the campaign. Similarly, the importance of the control of the air is never treated with less than the importance it deserves. Debilitation of troops, on both sides, by short supplies, disease, and jungle environment is prominent throughout the book.

The book is a competent study with some limitations. A text, with notes and index, of only 282 pages is insufficient for a thorough treatment of so complex a subject. Notably, since major focus is given to staff actions and planning deliberations, the battle narratives are less than adequate. The 25 pages of notes include much material that should have been in the narrative; as in most histories today, the notes unfortunately follow the text. Maps of insufficient complexity to support the narrative are positioned awkwardly at the front of the book. By concentrating on what went wrong in the Guadalcanal campaign, the author gives too little attention to the lessons learned that improved amphibious operations later in the war—in North Africa, the Marshall Islands, the Marianas, Leyte, Iwo Jima, and Normandy. In a small book dealing with so broad a subject, the editing should be tight; however, in General Griffith's study several extraneous vignettes remain. A bibliography would also increase the value of this work.

Robert J. Boyd
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Offutt AFB, Nebraska

The Apostles of Mobility by Field Marshal Lord Carver. New York: Holmes & Meier Publishers, 1979, 108 pages, $13.50.

Few things disappoint a reader so much as a good idea poorly executed by a capable individual. Lord Carver's idea was to examine the relationship between the theories of armored warfare developed between the two world wars by the "apostles of mobility" and the practice that evolved during and after World War II. Lord Carver appeared equal to the task. His military career centered on armored operations and resulted in his elevation to Chief of the British

Defense Staff. Despite the quality of the idea and its executor, however, the book suffers from shallowness, confusion, and misunderstanding.

Lord Carver begins with a very brief survey of the major ideas of the apostles, including a recounting of the tank's birth. The value of the survey is limited by its shallowness. The author summarizes 26 years of theorizing and technical development in just 43 pages of less-than-pithy prose. The result is a cursory glimpse of the major ideas of J. F. C. Fuller and Liddell Hart despite the fact that the author treats them as the primary "apostles."

The second half of the book examines the relationship between the theories of the "apostles" and later practice. Lord Carver seeks examples of theory put precisely into practice without alteration of concept or detail. As the reader might suspect, the author finds few examples and thus concludes that the theorists had limited influence on actual practice.

In his demand for such precise application of military theory, Lord Carver misleads the reader in terms of the importance of theoretical military thinking. War is not a pursuit subject to the finite laws of mathematics or physics—war is a violent art form subject to all the vagaries of humankind. Thus direct transference of theory to practice is difficult at best. The value of theory lies in challenging conventional wisdom, providing a springboard for new ideas, and preventing complacency in a naturally conservative profession.

Apostles of Mobility is mildly interesting if not enlightening reading. However, the casual reader should keep in mind that while details shape the course of events, ideas shape the course of history.

Lieutenant Colonel Dennis M. Drew, USAF
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Present Danger, Towards a Foreign Policy by Robert Conquest. Stanford, California: Hoover Institution Press, 1979, 200 pages, $12.00.

We have reached the point where we simply can afford no more mistakes, argues Robert Conquest. Our survival is at risk. The foreign policies of the West—the democratic culture—have come to the present state of disarray from lack of understanding of the true nature of the messianic despotism of the Soviet Union and of the motivations of its leaders.

Conquest, British author of several important works on the Soviet Union and currently a Senior

Research Fellow at the Hoover Institution, points a way to remedy the circumstance in this collection of several essays, parts of which have appeared elsewhere.

The book is not meant to be a systematic analysis of foreign policy. Happily, it is a forcefully written overview of some of the basic dynamics of international politics. It has chapters on Soviet motivations, détente, arms, human rights, negotiations and treaties, the United Nations, the Western Alliance, the other communisms, the Third World, and concludes with a chapter on the home front—Britain.

The author writes that our most serious task is to avoid nuclear war while preventing the overthrow of Western democratic culture by its regressive despotic opponents. He points up the fact that the American advantage in armaments has largely been lost and avers that a "cycle of appeasement" has set in, beginning in Vietnam in 1975 and reinforced by events in Angola and Ethiopia.

The central aim of our whole policy toward the Soviet Union, he writes, must be to seek those freedoms spelled out in the Final Act of Helsinki, especially the "free movement of ideas." Unless the Soviets are made to pay in the "intangible coin" of liberty and tolerance, they ought to gain no economic, political, or other benefits from us. The worst way to induce even gradual change, he argues, is to imply any approval for the status quo.

Judging that the Soviet political system is gradually running down for want of fresh energies, Conquest argues that the Soviet leadership itself constitutes the only motive force of Soviet foreign policy. These dogmatic and intolerant men are hostile to all that Western culture represents: the next generation may be even more myopic.

Conquest plans to develop his ideas more fully in a later and longer work. It, too, should be informative reading for the busy officer.

<div align="right">Dr. James H. Buck
University of Georgia, Athens</div>

The Culture of Narcissism: American Life in an Age of Diminishing Expectations by Christopher Lasch. New York: W. W. Norton & Company, 1978, 268 pages, $12.95.

For members of the U.S. Armed Forces, keenly aware of the responsibility entrusted to them of defending the American way of life, Christopher Lasch's new work offers a sobering, possibly chilling, perspective. The author, an educator and historian, documents his thesis that the American culture of competitive individualism is now dying. According to Lasch, its decadence has turned individualism into "a war of all against all," with the pursuit of happiness replaced by "a narcissistic preoccupation with the self."

In support of his view, Lasch examines many of the fundamental aspects of American culture, indicting all of them. The decline of education has fostered a new illiteracy. Sports have degenerated into mere spectacles. The former personal goals of riches, fame, and power have been replaced by vanity seeking the applause of others. Americans have come to prefer enduring the ironies of fate to making reasoned, self-conscious choices. Personal relationships have been trivialized, destabilizing the family. People are terrified by old age, and society is intolerant of its older members.

Can American society still be saved? Is it worth saving? These are crucial questions left for the thoughtful reader of *The Culture of Narcissism* to answer.

<div align="right">Captain Steven E. Cady, USAF
Alexandria, Virginia</div>

The Eighteenth Day: The Tragedy of King Leopold III of Belgium by Remy and translated by Stanley R. Rader. New York: Everest House, 1979, 348 pages, $10.00.

On 28 May 1940, King Leopold III of Belgium surrendered his nation's army to General Walter von Reichenau, commander of the German Sixth Army. This event ended an eighteen-day campaign and opened the door for acrimonious charges by the French, the British, and Leopold's own ministers that the king had betrayed his allies and his own country by his precipitous decision to surrender and his stubborn refusal to leave Belgium to continue the fight from France or Britain.

The author, who served with the French resistance, disputes these charges, claiming that the king acted for the benefit of both his allies and his people. Remy sees the events in terms of heroes and villains, with Leopold filling the role of the former and the politicians—"those puppets who despite everything were still so full of their own self importance" (p. 206)—such as Paul Reynaud, Paul Henri Spaak, and Hubert Pierlot, playing the part of the latter.

Though a strong case exists for Leopold's actions, Remy's book (originally published in French in 1976) is not the place to find it. Despite producing a work that depends on quotes from newspapers, radio

broadcasts, personal recollections, and secondary works for at least half of his text, the author provides no footnotes or bibliography, instead depending on such statements as "I have it on good authority." (p. 87) In addition, his own opinions are marred by excessive sarcasm, questionable conclusions, and a style that is often disjointed and repetitious. In short, this is a book that can safely remain unread.

Dr. Calvin L. Christman
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The Jet Age, Forty Years of Jet Aviation by Walter J. Boyne and Donald S. Lopez. Washington: Smithsonian Institution Press, 1979, 190 pages, $17.50 cloth, $7.95 paper.

The Jet Age is a chronology of jet aviation development and growth—from the birth of the jet engine to an analysis of flight services requirements through the late 1980s. This compilation of selected articles provides a quick review of an era of aviation history. The authors have lived through the times and contributed to the events. Some technical data are included, but materials are adapted for readability for both the curious novice or the serious, more technically proficient student. More than 150 photographs and numerous graphs and sketches enhance the work. The aircraft photos alone make the book worthy of shelfspace and provide a reliable reference source—almost as good as a visit to the Smithsonian Air and Space Museum.

Lieutenant Colonel Billie D. Capshaw, USAF
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Nuclear Nightmares: An Investigation into Possible Wars by Nigel Calder. New York: Viking Press, 1980, 163 pages, $10.95.

"The men who consider how to fight and 'win' a nuclear war have largely displaced those who were only interested in deterring war. The 'unthinkable' has become most thinkable and calculable, and the concept of deterrence is crumbling fast. . . . The theories are almost literally insane, and if the strategic analysts manage to infest the national leaders with their heresies, they will make the world a very dangerous place," writes Nigel Calder. (p. 142) *Nuclear Nightmares*, which was also a British Broadcasting Corporation television special aired in the United States during the summer of 1980, is an important

and troubling book. Those who deal with nuclear matters at all will be disturbed by the message of this slim volume, but it should be required reading for us all.

Calder's basic analogy is four "nightmares," scenarios by which nuclear war might begin. The first, the "German volcano," is escalation of a European central front war which, as he points out, almost automatically becomes nuclear because of the NATO policy of "first use" of tactical nuclear weapons. The second nightmare, the "nuclear epidemic," is the proliferation of nuclear weapons to new states, and he is particularly pessimistic here: "Unless in those few years of uncertain grace the major nuclear weapons states take a large step toward nuclear disarmament . . . they will not be entitled to complain if fifty new countries decide they too must have the bomb." (p. 72) The third nightmare is less specific. The "headless dragon" is the fear of command and control failures in times of crisis and how temptations to interrupt command, control, communications, and intelligence (C^3I) could make war more likely. Finally, there is the problem of counterforce-capable weapons, the "missile duel." Of that problem, he suggests that "the years around 1985 indeed look highly dangerous. . . . The central reason is not so much the threat of a Soviet 'first strike' against the Minuteman silos as the Americans' fear of it, matched by a similar Russian fear of an American 'first strike.'" (p. 125)

What commends *Nuclear Nightmares* is that it stands in stark juxtaposition to the sterility of much of the recent nuclear literature. Writing with style and subtle wit, Calder reminds us in clear language of the human consequences of our activities, an area where recent thinking has been most remiss. That is why anyone who thinks, writes, or makes decisions on nuclear matters should have this book on his or her required reading list.

Dr. Donald M. Snow
University of Alabama, Tuscaloosa

The Brink: The Cuban Missile Crisis, 1962 by David Detzer. New York: Thomas Y. Crowell, 1979, 299 pages, $11.95.

The Brink presents an in-depth look at the Cuban missile crisis of 1962, with special emphasis on how President John F. Kennedy's administration approached and dealt with the problem. Readers will find the book well written, containing enough suspense and drama to be engrossing. The only real fault one might find is that little new information is

provided. Author David Detzer emphasizes how deeply concerned the Kennedy administration was over its public image at this time. The point is well taken, but the author does not pursue the issue far enough. For instance, one of the options that Kennedy wanted to initiate was a "surgical" strike by the U.S. Air Force. The metaphor is inappropriate and bears analysis. To equate a military operation such as a missile emplacement with a surgical procedure seems a little farfetched. However, the analogy was accepted by those concerned, with one major exception: The Air Force's answer was that it could not be done.

Detzer notes Kennedy's preoccupation with the nonexistent surgical strike capability of the Air Force until convinced that it was not a viable option; only then did he move on to other possible solutions. The author is concerned with Kennedy's desire to control the image he would present to the American public when announcing his answer to the crisis.

For an intelligent reading of books of this type, one would do well to study Murray Edelman's *The Symbolic Uses of Politics*. This work discusses images and political symbols and presents some new critical tools with which to review history. Thus armed, the reader may find himself similarly interested in the images and symbols that were so important to the Kennedy administration and the author of *The Brink*.

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Lieutenant Colonel Walter Kross (B.S., Niagara University; M.S., Auburn University; M.S., Southern Illinois University) is a research fellow at National Defense University. He has flown both tactical and airlift aircraft, including the F-4, C-141, VC-135, and VC-137, with 157 combat missions (100 over North Vietnam). He has served as a staff officer in the Tactical Forces Division, Directorate of Plans, Hq USAF, and as a member of the CSAF Staff Group. Colonel Kross is a Distinguished Graduate of Squadron Officer School and Air Command and Staff College and a graduate of Air War College.

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AWARD

The Air University Review Awards Committee has selected "Janus: Concept for a Multipurpose Fighter" by Colonel Richard M. Suter, USAF, as the outstanding article in the May-June 1981 issue.

attention

The *Air University Review* is the professional journal of the United States Air Force and serves as an open forum for exploratory discussion. Its purpose is to present innovative thinking concerning Air Force doctrine, strategy, tactics, and related national defense matters. The *Review* should not be construed as representing policies of the Department of Defense, the Air Force, Air Training Command, or Air University. Rather, the contents reflect the authors' ideas and do not necessarily bear official sanction. Thoughtful and informed contributions are always welcomed.

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