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*Technological Surprise*



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# from the editor's aerie

Technological surprise has been a fact of military life at least from the time of David's adroit slaying of Goliath until the October or Yom Kippur War of 1973. It still keeps strategists at their planning boards. In the opening article, scientist-inventor Dr. George H. Heilmeier, Director of the Defense Advanced Research Projects Agency (DARPA), outlines for us the various facets of technological surprise and elaborates on the several means of preventing it in his "Guarding against Technological Surprise." Along the way he propounds a number of provocative ideas, including the following observation: "The real difference between the surpriser and the surprised is usually not the unique ownership of a piece of new technology. The key difference is in the recognition or awareness of the impact of that technology and decisiveness in exploiting it."

*Review* illustrator Bill DePaola aptly suggests the subtle nature of technological surprise in his cover drawing for this issue.

At the phasing out of the Manned Orbiting Laboratory, it appeared that Vandenberg Air Force Base, California, would be relieved of its role in manned space flight but with the advent of the Space Transportation System, Vandenberg has been selected as the West Coast launch site for the Space Shuttle. Our *Air Force Review* article, "The Space Shuttle and Vandenberg Air Force Base," by Major General R. C. Henry and Major Aubrey B. Sloan, gives some of the background facts leading to selection of Vandenberg as one of two launch sites, the use to be made of existing facilities, and the general economic impact on the area.

That much-published author Anonymous has made only very infrequent appearances in the pages of the *Review*, and even then never veiled by that cliché designation. To the best of our collective recall, no pseudonymous author has ever appeared here—until now. "Major Mark Wynn" prefers to screen his true identity so as not to embarrass either his organization or his career field as he candidly relates his responses at being assigned an OER of Three. We think many of you will relate empathically to his reactions in "I Am a Three."

From time to time we are asked what the Air University Review Awards Committee is. Is it just another name for the *Review* editorial staff? No, the Awards Committee, whose principal function is to select the outstanding article in each issue of the *Review*, consists of four officials from Air University schools and organizations and the *Review* Editor. The present committee includes the Chairman, Colonel Henry L. Baulch, Air War College; Colonel Ray E. Stratton, Air War College; Wing Commander Peter M. Papworth, RAF, Air Command and Staff College; Dr. Kenneth J. Groves, Headquarters Air University; and Colonel Glenn E. Wasson, Editor, *Air University Review*.

We are grateful to the Committee for its faithful service. In this issue we announce the annual best article award winner—the first time a woman contributor has enjoyed the distinction. See page 88.

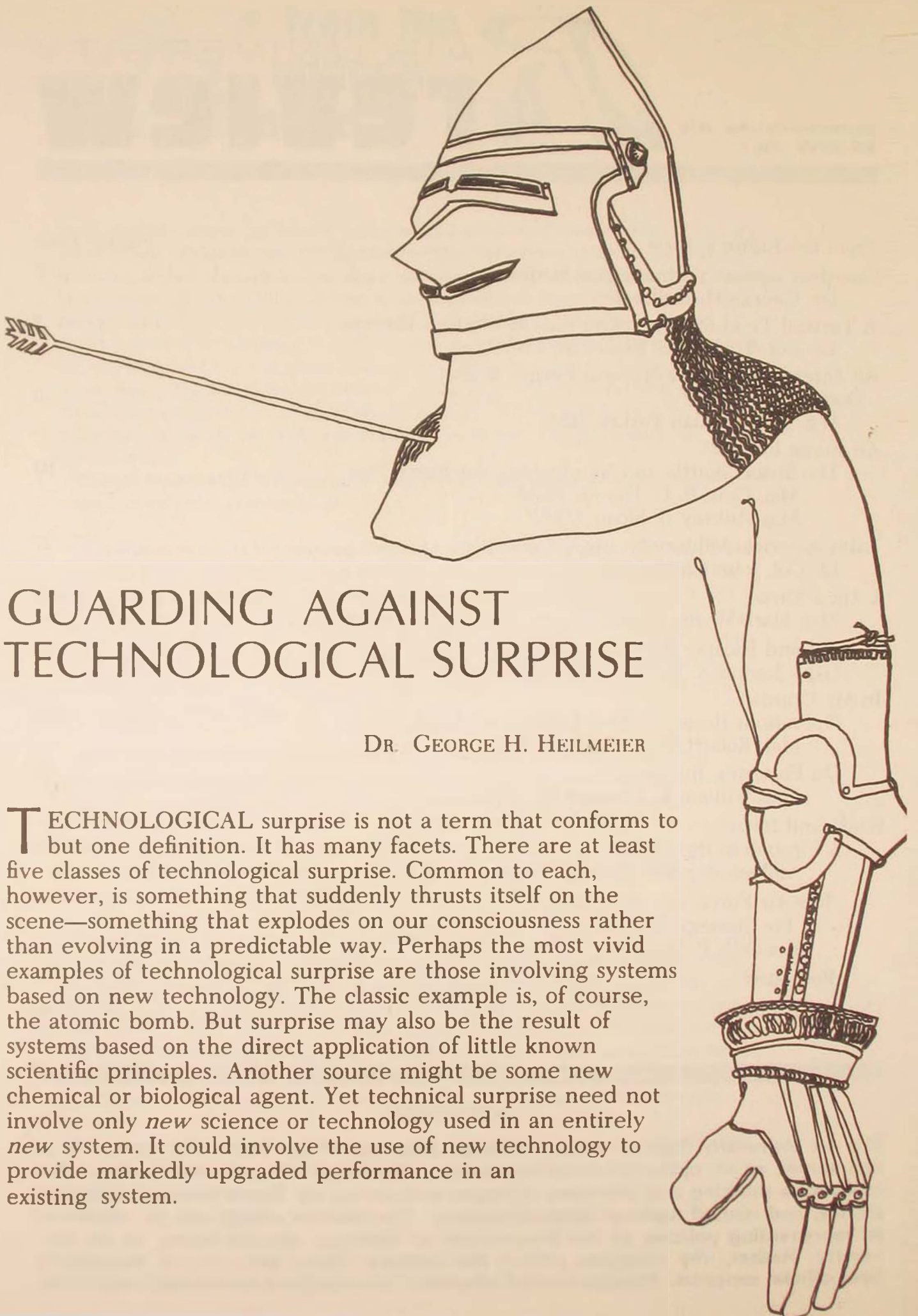




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### ATTENTION

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 and stimulate dialogue 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, or Air University. Rather, the contents reflect the authors' ideas and do not necessarily bear official sanction. Thoughtful and informed contributions are always welcomed.



# GUARDING AGAINST TECHNOLOGICAL SURPRISE

DR. GEORGE H. HEILMEIER

**T**ECHNOLOGICAL surprise is not a term that conforms to but one definition. It has many facets. There are at least five classes of technological surprise. Common to each, however, is something that suddenly thrusts itself on the scene—something that explodes on our consciousness rather than evolving in a predictable way. Perhaps the most vivid examples of technological surprise are those involving systems based on new technology. The classic example is, of course, the atomic bomb. But surprise may also be the result of systems based on the direct application of little known scientific principles. Another source might be some new chemical or biological agent. Yet technical surprise need not involve only *new* science or technology used in an entirely *new* system. It could involve the use of new technology to provide markedly upgraded performance in an existing system.

Such was the case with introduction of the jet engine fighter near the close of World War II. Technological surprise could also derive from a new system that utilizes a novel application of existing technology. However, some of the more decisive instances of technological surprise have involved the use of an old system in a new and novel way. A classic example is the German use of their 88-mm antiaircraft guns in an antitank role.

Obviously, then, there is more to technological surprise than new systems based on new science or new technology. New systems can also be based on existing technology; old systems can be markedly upgraded by new technology; or old systems can be used in a radically new mission.

But there is something more. The real difference between the surpriser and the surprised is usually not the unique ownership of a piece of new technology. *The key difference is in the recognition or awareness of the impact of that technology and decisiveness in exploiting it.* The system did not respond to early warnings of *Sputnik I* because we were too rigid to accommodate indications of impending surprise. As an aftermath, the Secretary of Defense formed Defense Advanced Research Projects Agency (DARPA) and gave it the charter of organizing America's response.

Perhaps the situation was best described by Admiral Alfred Thayer Mahan in his classic study, *The Influence of Sea Power upon History, 1660-1783*. This book has been a standard reference at the Naval Academy for over three-quarters of a century. Admiral Mahan noted that

changes in tactics have not only taken place after changes in weapons, which is necessarily the case, but the interval between such changes has been unduly long.

This doubtless arises from the fact that an improvement in weapons is due to the energy of one or two men, while changes in tactics have to overcome the inertia of a conservative class; but it is a great evil. It can be remedied only by a candid recognition of each change, by careful study of the powers and limitations of the new ship or weapon, and by a consequent adaptation of the method of using it to the qualities it possesses, which constitutes its tactics. History shows that it is vain to hope that military men generally will be at the pains to do this, but that the one who does will go into battle with a great advantage—a lesson in itself of no mean value.

That passage should be read and re-read. Those who ignore such lessons of history are doomed to repeat them.

#### Technological Surprise— A Historical Perspective

History provides us with many examples of situations where technology—some of it known, some of it unknown at the time—coupled with *tactics* provided surprise that was decisive. David's sling surprised and decisively defeated Goliath—90 percent tactics and 10 percent technology. The English longbow destroyed the flower of French knight-hood at Crécy in 1346, inflicting casualties at a rate of 100:1—again, 90 percent tactics coupled with 10 percent technology. The longbow represented a triumph for mobile, standoff weaponry over a heavily armored, slow-moving adversary and marked the beginning of the end for cumbrously armored knights. Henceforth, there would be a premium on speed and mobility. Heavy armor required big, slow-moving horses, and, as armor-penetration capability improved, the knights wore heavier armor and horses got bigger and slower. The longbow changed that, although it took two



centuries for strategists to learn that it was more difficult to hit a moving target. Thus, the cavalry came to the fore. The surprise of the longbow and what it did to the armor warfare of its day have some interesting twentieth century parallels.

World War II saw technological surprise at work on several fronts. Early in the war, the Germans used a combination of shaped-charge warheads delivered by gliders to attack and destroy the concrete bunkers at Fort Eben Emael in Belgium and paved the way for German penetration through the low countries. There were two problems to be solved: (1) A lightweight penetrator was needed to blast through reinforced concrete; (2) The attack had to be conducted from topside, and stealth was absolutely necessary. Eben Emael represented a classic marriage of technological and tactical surprise.

The Allies had their own technological surprises. Radar and the tactical superiority of the Spitfire enabled Britain to stave off the Luftwaffe and win the Battle of Britain. The advent of electrical intercept and code breaking technology once again demonstrated that mathematics was capable of providing technological surprises in direct and indirect ways. According to accounts recently made public, the ability to intercept and read German and Japanese codes may have played a far more decisive role in World War II than we had previously believed. But the use of mathematics in military applications is not at all new. Napoleon was the contracting officer for Laplace, Fourier, and Lagrange.

The 1973 October War saw several instances of technological surprise, most of them on the part of the Arabs. Electronic warfare was used extensively on the battlefield instead of above it. A new surface-to-air missile system, the SA-6, and a low-

altitude anti-aircraft gun system proved far more effective than previously thought. It was also learned that anti-tank weapons, such as the Sagger missile, could do their job under the right conditions. Fortunately for the Israelis, none of these surprises proved to be decisive, but, as their chief ally, we learned that technological surprise need not be based on new technology; knowing the technology is really quite different from recognizing its tactical or strategic importance and exploiting it.

### Prevention of Technological Surprise

The key question remains. How does a democracy such as ours prevent technological surprise? The emphasis is on prevention because the nature of our open society and the present climate in the media make it very difficult for us to perpetrate technological surprise. Much of our advanced technology is already visible before it can become a force factor. One thinks particularly of the F-14, F-15, B-1, F-16, and Airborne Warning and Control System (AWACS). How can these perpetrate technological surprise when their characteristics are openly discussed and debated?

There are seven steps which a free society can take to prevent technological surprise:

- Maintain the technological initiative. Get there first so that you can understand what a potential adversary might be doing based on fragmentary evidence, but also understand the asymmetries in approach and philosophy.

- Ensure that intelligence is timely. If one is to deduce capability based on fragmentary evidence and signs, these must be provided in a timely manner. Intelli-

gence which is treated as history simply will not do. For intelligence to be useful, it must be timely and correctly assessed by those who can do something about it.

- Develop options. We must proceed along several paths so that technological surprise that could nullify a key capability is not decisive. That is why the Triad of missiles, bombers, and submarines is still such a vital part of our deterrence. It prevents us from being at the mercy of technological surprise that may counter one of our strategic deterrent systems.

- Develop mechanisms that provide for an orderly response when a technological surprise suddenly appears. The rapidity with which the electronic warfare community understood the nature of the SA-6 and the counters to it is a fine example of the need and importance of a capability to provide an orderly response to a new threat.

- Make tactical and doctrinal flexibility part of our training and test and evaluation processes.

- Create an atmosphere of cooperation and exchange between technologists and commanders of real forces. This might be done by a friendly competition in which the technologists could present five or ten new concepts and the commanders would compete as teams for the most imaginative tactics using new technology. But more is needed. Technologists and commanders must work together in the evaluation of technology—a kind of test marketing—a further refinement on “fly-before-buy.”

- Finally, make sure that there will be a close working relationship between defense-oriented scientists and engineers and their colleagues in the industrial and in the university technical communities. There needs to be a cross-fertilization of ideas and concepts—synergism, serendipity; call it what you will,

it is the kind of relationship that provides new insights and perspectives so important to technological breakthroughs.

### The Future

As we look to the future, technological surprise is more dangerous than ever before. In a very real sense, the world has become smaller so that it is easier to deliver surprises to our doorstep. As I see it, in future conflict there will be a premium on fast response. Modern weapons may make the first battle the last battle. This means that forces in being are more important than force potential and deterrence more important than inherent capability. The manufacturing base which was critical to the United States in past wars will be of little use to us in future conflicts that are quite likely to be short, violent, and dominated by advanced technology. There simply will not be time to mobilize an entire nation and its manufacturing base. There will be no time for bond drives, gearing up, mobilization, and determined national production.

These are sobering thoughts, but if we are more vulnerable to technological surprise in an increasing technological world, what are the areas in the future from which such surprises may come? Engineers and scientists have perfect *20-20 hindsight* but continually demonstrate an appalling lack of *foresight*. They tend to overestimate what can be done in the short-term and underestimate what will be done in the long-term.

In 1878, Friedrich Engels indicated that the weapons used in the Franco-Prussian War had reached such a state of perfection that further progress which might have revolutionizing influence was no longer possible. Yet thirty years later, the following unforeseen systems



were used in World War I: aircraft, tanks, chemical warfare, trucks, submarines, and radio communications. A 1937 study entitled "Technological Trends and National Policy" failed to foresee the following systems, all of which were operational by 1957: helicopters, jet engines, radar, inertial navigators, nuclear weapons, nuclear submarines, rocket power missiles, electronic computers, and cruise missiles. The 1945 von Kármán study entitled "New Horizons" missed ICBM's, man in space, and solid-state electronics—all of which were operational within 15 years.

Thus, it is with a sense of humility and perhaps even a bit of lunacy that I outline ten areas in which technological surprise may be critical or even decisive.

1. *Space Defense*—Both the United States and Russia depend heavily on space assets. Ponder the consequences of a system that could protect satellite resources while possessing the capability to destroy enemy satellites in a surgical and timely manner.

2. *Antisubmarine Warfare*—Ponder the consequences of an ability not only to detect but to localize and track quiet submarines at long range.

3. *Undersea Vehicles*—Ponder the consequences of undersea vehicles capable of conducting themselves in a manner similar to airborne remotely piloted vehicles.

4. *Passive Surveillance*—Ponder the consequences of an air defense system that has no radars to reveal its presence.

5. *"Really Smart" Weapons*—Ponder the consequences of weapons that seek out and destroy specific targets such as tanks and surface-to-air missile sites without the need for a designator; weapons that are patient and can pursue goals over time; preplaced weapons that can wait for their specific targets to appear.

6. *Threat-intensive Electronic Warfare*—Ponder the consequences of electronic warfare suites that are independent of the threat. There would be no more SA-6 surprises. A threat is evaluated and the appropriate response is generated on the spot, not after the force is attrited.

7. *Submarine-launched Surface-to-Air Missiles*—Ponder the consequences of giving the submariner the ability to defend himself, while still submerged, against airborne surveillance threats.

8. *Armor*—Ponder the consequences of tank armor that could counter both the shaped-charge warheads of antitank missiles and kinetic energy penetrators from guns.

9. *Ballistic Missile Defense*—Ponder the consequences of a leak-proof ballistic missile defense, one that could not be overcome by numbers.

10. *Soviet Technological Expertise*—Ponder the consequences of whether a surprise could come from technical areas where we have a funding asymmetry with the Soviets? There are several areas of Soviet science and technology in which their effort, we believe, is much larger than ours: Areas such as high-pressure physics, ocean wave theory, chemistry relating to high explosives, magnetohydrodynamic power production, inductive storage and switching systems for pulsed power control, satellite-borne radar, and chemical and biological warfare. We do not know why the Soviet efforts are as large as they seem to be. We simply do not understand their investment strategy in these areas.

I THINK I will stop at ten areas where technological surprise might be critical in the future though



there are undoubtedly many others. Potential areas of technological surprise are not difficult to formulate. What is unique about the time in which we live is that, unlike any time within the past decade, there are technological initiatives on the horizon that could dramatically influence national security. Difficult technical problems remain, but these initiatives just might make our list of areas of potential technological surprise more than science fiction.

- I am thinking of high-energy chemical lasers that lend themselves to space-based operation because of their high mass efficiency which requires no large electrical power supply.

- I am thinking of technology that extends the use of monolithic silicon integrated circuits into the infrared, where they can perform both the sensing and signal processing functions on a single chip. Sensor systems with millions of infrared detectors together with on-chip processing could lead to passive air defense and multipurpose warning systems.

- I am thinking of adaptive optics, which can compensate for atmospheric turbulence and the imperfections of large optical systems in real time.

- I am thinking of technology that can substantially lower the drag on undersea vehicles. Drag is the parameter that determines the range, endurance,

speed, and payload of undersea vehicles.

- I am thinking of technology that combines artificial intelligence and large-scale integration to make really smart sensors.

- I am thinking of technology that can make the sea amenable to the same kind of signal processing sophistication that made ballistic missile launch detection, trajectory prediction, and target discrimination possible.

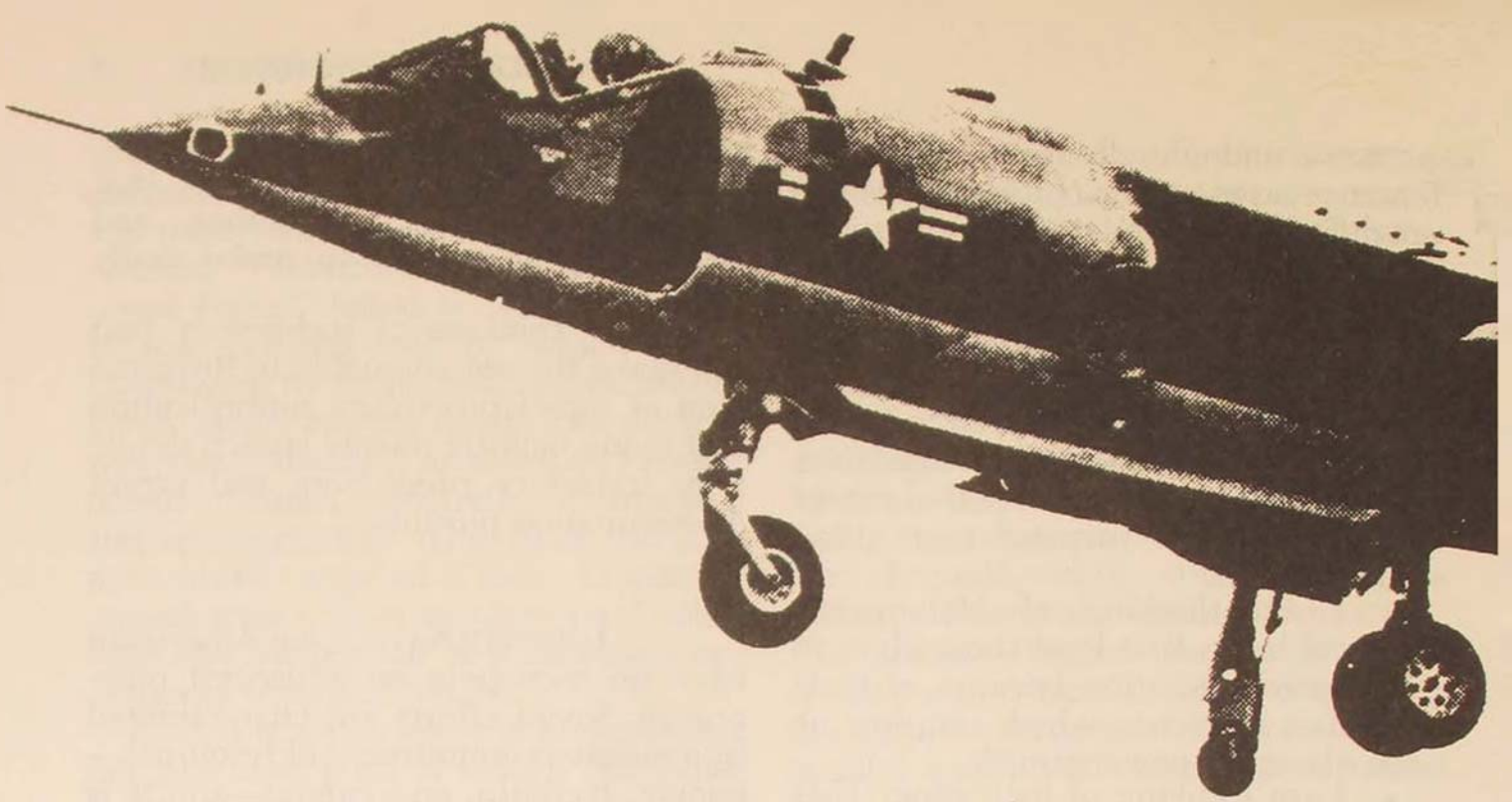
UNFORTUNATELY, we Americans have no monopoly on advanced technology. Soviet efforts are characterized by a massive commitment of resources—people, facilities, and capital—and it is not clear that we can get there ahead of them.

Yet make no mistake about it. It is *essential* that we get there first because of the inherent disadvantage that a free society has when competing against a secretive and closed society. We do not have a choice. We must compete. Technological change will no longer wait on our initiative alone, nor is it possible to turn back the clock as some modern-day Luddites have suggested. In this our Bicentennial year, we must rededicate ourselves to a policy of peace through strength and with a resource commitment to match.

Arlington, Virginia

Hasty rejection of technological advances, especially where diminishing returns to scale have not yet set in, is just as unwise as a premature decision to deploy new weapons systems. We must be wise enough to do research and exploratory development on new technologies, yet strong enough to refuse production if the resulting systems are inefficient.

Donald H. Rumsfeld,  
Secretary of Defense



A TACTICAL TRIAD  
FOR DETERRING LIMITED WAR  
IN WESTERN EUROPE

LIEUTENANT COLONEL THOMAS C. BLAKE, JR.



FOR OVER two decades United States military planners have endeavored to establish and maintain a credible deterrent against a conflict between the North Atlantic Treaty Organization (NATO) and the Warsaw Pact (Pact) nations; and, if deterrence failed, to effect a favorable outcome in the conflict. These efforts necessarily commanded a significant amount of attention because of the enormity of the potential threat that such a conflict would pose to U.S. national interests. In a European conflict, the Soviet Union would have a strategic advantage over the United States in supplying and reinforcing its principal allies. The Pact nations also have a numerical advantage over NATO countries in ground combat forces, especially artillery and tanks. The numbers of opposing tactical combat aircraft deployed near the Central Region of Europe are roughly equal, although NATO tactical air (TACAIR) forces are believed to have a qualitative advantage because they are made up of a large number of more modern offensive aircraft. (TACAIR forces which the Pact could launch against the NATO Central Region, with very little warning, consist of about 2800 aircraft—of which the majority are primarily air-to-air fighters. To counter this immediate threat, NATO deploys more than 2700 tactical combat aircraft—about half of which are fighter bombers—in a roughly comparable area of Western Europe.)<sup>1</sup>

### Tactical Air Forces as a Deterrent

TACAIR forces are counted on to offset, in part, possible numerical inferiorities in land forces as compared to those of potential adversaries. The U.S. bears a proportionally greater responsibility for carrying out tactical air combat missions

than do our allies, particularly in NATO where our TACAIR resources serve as an "equalizer."<sup>2</sup> While the needs of NATO's Central Region provide the basis for most of our general purpose forces, we cannot ignore the possibility of conflict on the flanks. The northern and southern NATO regions might invite separate or simultaneous attack in the absence of adequate deterrent forces.<sup>3</sup> TACAIR forces can be used to mass firepower rapidly to counter enemy aggression either along the borders of the Central Region or the northern and southern flanks of NATO Europe. Hence, NATO TACAIR power serves as a major deterrent against a limited conventional war by reducing the potential advantages to be gained by initiating a surprise attack and by providing an "equalizer" to serve as a balance to the numerical superiority of the Pact land forces.

However, this balance provided by TACAIR combat forces could be upset if the Pact nations were able to make air base attack a more lucrative tactic. For example, the scales would be tipped in favor of the Pact nations if they were able to rapidly destroy a major portion of the NATO tactical aircraft or essential logistical assets on the ground or, in any way, inflict a major disruption of the NATO TACAIR sortie rate at the outset of hostilities. Were they to achieve either of these objectives, Pact armored forces, operating relatively unhampered by NATO TACAIR forces, probably could advance more rapidly. Having the capability greatly to reduce the effectiveness of NATO TACAIR power could provide a strong incentive for the Pact nations to initiate a surprise attack in the pursuit of an aggressive strategy.

The continued value of NATO TACAIR forces as a deterrent, then, may depend upon: (1) how well they can continue to



survive while on the ground, get airborne before, during, and after being attacked, and how well they can sustain operations in the face of intensive anti-airbase tactics; and (2) how well they can accomplish their assigned tasks in an extremely hostile environment.

TACAIR ground survivability will continue to be increasingly threatened by technological advances in offensive weapon systems and munitions. As protective shelters on air bases are progressively hardened, determined and technically capable nations most likely will continue to develop munitions that can penetrate these shelters and destroy the aircraft and other mission-essential resources they contain. Such weapons might be employed against individually sheltered resources using precision guided munitions (PGM); or when the concentration of lucrative targets is exceptionally dense (as it is on many NATO air bases), random area bombing techniques may be very effective. Further, small and lightweight penetrating munitions have been successfully developed and tested. These could make it operationally possible for a relatively small payload to "blanket" an airstrip and inflict damage to steel reinforced, concrete runways that is much more difficult to repair than simple cratering. Methods for delivering these munitions potentially are so varied that it would be extremely difficult, if not impossible, to provide an active defense offering total protection.

Parked aircraft and other mission-essential resources, even though concealed and hardened, very likely can be detected (if necessary) and destroyed so long as they are concentrated and clustered on an air base—especially in the vicinity of a conspicuous landmark such as a runway. Runways attract attention to other nearby resources and are themselves targets.

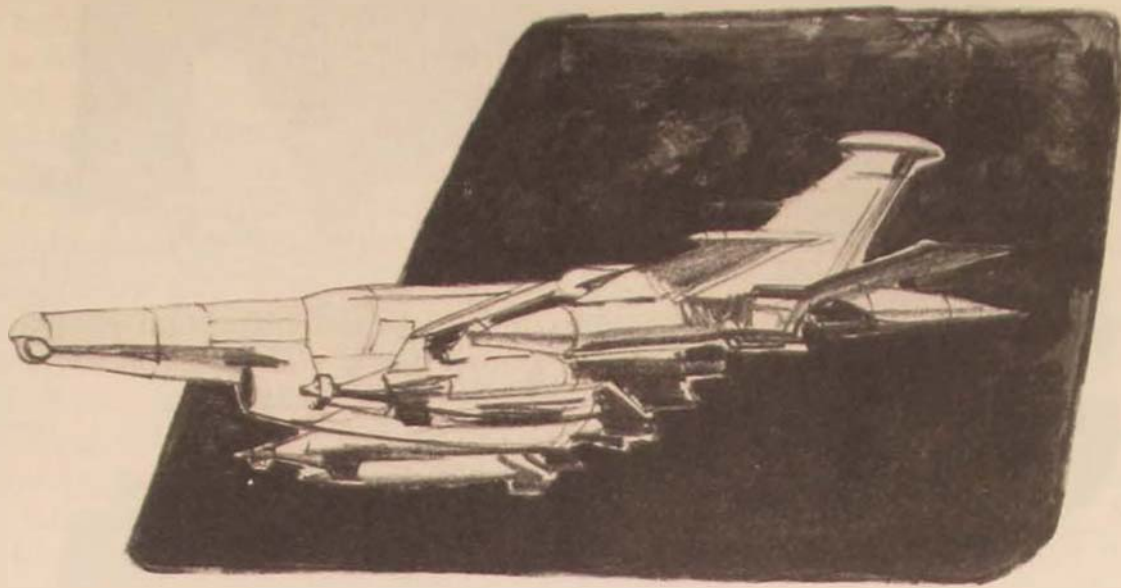
Even if the aircraft and the logistics infrastructure survive attack, sortie rates of conventional take-off/landing (CTOL) aircraft can be disrupted by the damaging of runways.

These factors combine to make a sudden mass attack on air bases inviting to the Pact forces. One alternative for improving ground survivability and thereby improving the deterrent value of TACAIR power is by increasing the effectiveness of existing active and passive defense measures. This could be achieved through dispersal of aircraft and logistics infrastructure to smaller, more numerous bases or operating sites. This kind of proliferation of bases and dispersal of assets would be helpful against both conventional and nuclear weapons. However, dependence on runways and taxiways is a pivotal liability that first must be reduced because it limits the extent to which TACAIR bases feasibly can be proliferated as well as the value that can be gained by dispersal. This disadvantage can be circumvented by using TACAIR forces that can be "zero" launched and recovered, such as is possible with manned vertical/short takeoff and landing (V/STOL) aircraft and unmanned drone/remotely piloted vehicles (RPV).

### Deterring Warsaw Pact Aggression

Apparently, no one system can provide all that is needed to cope with the two-part problem of ensuring that NATO TACAIR forces remain survivable and effective in the face of advancing Warsaw Pact munitions and standoff delivery technology. Each system alone—CTOL, V/STOL, or drone/RPV—has both strengths and serious weaknesses.

Manned CTOL aircraft generally are



quite capable because of their flexibility and versatility. But since they must depend on runways, they can be denied a full range of operating sites and held on or off an airfield whose take-off and landing areas have been damaged. Also, CTOL aircraft tend to become more and more expensive as they acquire the sophistication to carry out their mission in an increasingly hostile combat environment.

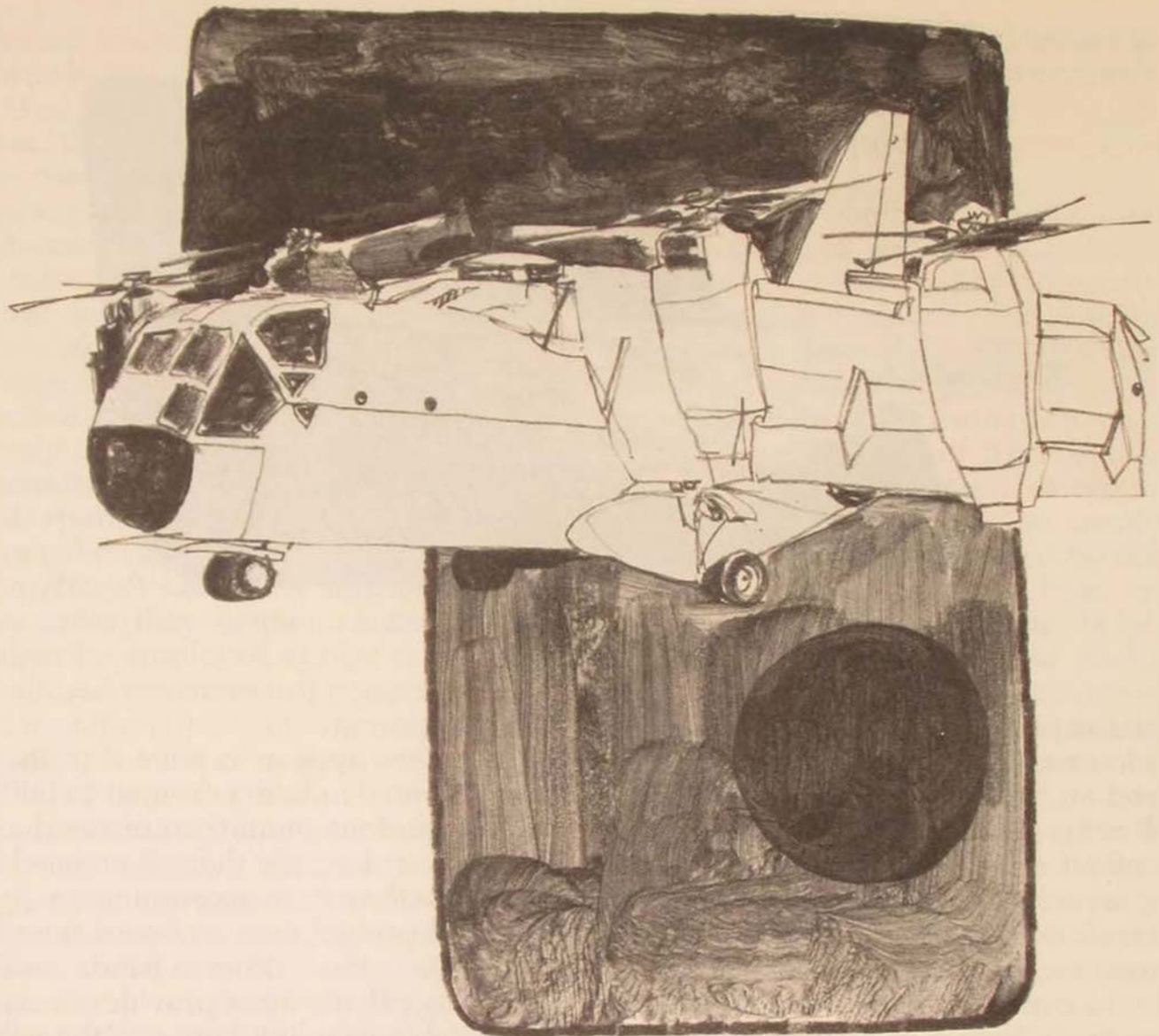
Manned V/STOL aircraft would be expensive for the same reasons as well as for the added costs necessary to provide vertical operational capability. And, although vertical capability offers versatility in some operational modes, it imposes a penalty on the sum of possible trade-offs in range, payload, and endurance. Technological advances that increase the effectiveness of manned systems generally would be applicable to both CTOL and V/STOL aircraft. Yet one realizes that the marginal utility of such advances, depending upon their nature, could be significantly greater for the V/STOL system because of its relatively primitive stage

of development.

Drone/RPV appear to have a tremendous potential in being cheaper to build, operate, and maintain than manned aircraft—in part because there is no need to pay the high costs to accommodate, support, and protect man on board the system. On the other hand, until technological advances provide a secure and reliable data link between the vehicle and its remote controller, unmanned aircraft will continue to be severely limited in the ways they can supplement the manned TACAIR force.

However, as we shall see, these three types of systems can be combined to capitalize on their strengths and minimize weaknesses. If such a force were structured properly, it would not be essential that any one system be invulnerable, for each would be able to complement the other's deficiency in some way while making its own unique contribution. The fatal consequences of placing total reliance on runways could be avoided by acquiring zero launch/





recovery systems; relative to CTOL systems, the higher costs of acquiring, operating, and maintaining V/STOL aircraft could be offset by the lower costs projected for drone/RPV; the expected high loss rates for manned systems performing certain tasks in intensely hostile environments for which drone/RPV were capable could be mitigated through the use of these unmanned systems; and while this field of technology evolves, the operational limitations of drone/RPV could be

compensated for by manned systems. Differing from the Strategic Triad, in which each of the three components serves to deter by its own unique contribution, the force resulting from a mix of CTOL, V/STOL, and drone/RPV would be a synergistic deterrent—stronger than the sum of its parts—and serve as a “Tactical Triad.”\* A structure composed of manned and unmanned systems would be in consonance with the high-low cost mix

\*An unofficial term coined by the author.





philosophy for optimizing force size within tight budgetary constraints. Additional savings would be possible if the capabilities of the component systems comprising the total force each were tailored into high-low mixes for countering the extremes of the threat spectrum.

In addition to its ability to survive, such a high-low mix would offer certain advantages by increasing basing options. For example, substantially greater numbers of the CTOL portion of the force could be based farther to the rear of the expected area of operations, e.g., in the United Kingdom, where they would be easier to protect against most threats. The V/STOL and drone/RPV aircraft, able to disperse widely, could be stationed closer to the actual or expected combat area. This basing strategy would allow the United States to exploit its superiority in stand-off technology, in-flight refueling, and CTOL aircraft range. At the same time, the capability of the zero launch and recovery systems to survive, respond rapidly, and sustain operations in the face of intensive major air base attack could be exploited.

### Feasibility of the Concept

The Air Force has investigated V/STOL systems with varying degrees of interest for many years but, for several reasons, has never chosen to acquire an operational capability. For one thing, gross weight limitations for vertical operations severely constrain fuel and payload capacity. Various recent technological advances have alleviated the adverse effects of this limitation, and projected advances in weapons, fuels, and designs hold promise for reducing the constraint itself. For example, the use of precision guided munitions (PGM) is not greatly affected by the small payload factor be-

cause PGM are relatively small and light-weight, and not as many are required to equal the lethality of comparable unguided bombs against hard point targets. Improvements in aerodynamic and propulsion design are underway to make vertical operations more efficient. Achievements in other areas such as exotic fuel research and subsystem miniaturization will also offset the payload constraint and enhance the utility of V/STOL systems.

Historically, another major drawback to V/STOL systems has been that they were expensive to develop, fly, and maintain. Although this is still true, the differences in costs between conventional and V/STOL operations have been reduced greatly and show potential for further reduction—again, largely through technological advances.

There are other ways in which specific cost barriers to V/STOL exploitation could be mitigated. For example, economies in research and development could be realized by (1) selectively buying into ongoing U.S. Navy and Royal Air Force (RAF) programs; (2) exploring and evaluating new and high-risk theories in ways that minimize cost and uncertainty—as is the aim of the Air Force Technology Integration program; or (3) employing some combination of these two methods. Buying into other Services' programs also can cut procurement costs through larger production orders where operational requirements are compatible.

Innovative concepts for providing logistical support (including major maintenance and repair) to operating sites dispersed from main bases may suggest both feasible and substantial improvements and economies over current V/STOL support systems. Creative application of new technology as typified by modular, easy-access components,

remove-and-replace techniques, and simplified, more reliable subsystems should continue to make maintenance and repair easier and cheaper. The RAF and the U.S. Marine Corps conducted field exercises with the AV-8A Harrier from dispersed, undeveloped locations and substantiated the theory that operations could be sustained from other than main bases. Although just a first-generation version of operational, tactical V/STOL aircraft, the Harrier has repeatedly demonstrated its maintainability by sustaining high sortie availability rates that equal or excel those of comparable conventional aircraft conducting field exercises from bare bases. According to technical representatives of the civilian aircraft industry and engineers from the Flight Dynamics Laboratory, Aeronautical Systems Division, Air Force Systems Command, there is no reason—from the standpoint of maintainability—why designs for V/STOL aircraft capable of sustaining operations from undeveloped sites dispersed from main bases could not be improved further.

Operational economies could be realized in a variety of ways. In peacetime, and in some wartime situations, V/STOL systems could be operated from existing main bases. Except where vertical operations would be required, such as during hostilities or when conducting training and tactical field exercises, short and conventional rolling takeoffs could be used to save fuel. Other techniques that might be used to cut operational costs include (1) cutting flight endurance needs by using ground alert in forward areas rather than in-flight loiter over the battlefield; (2) forward basing to reduce enroute distances; and (3) making maximum use of standoff weapons delivery capability to reduce penetration distances and requirements for penetration aids.

Although V/STOL systems may cost more to operate and maintain than CTOL, the increased insurance they offer against the success of a sudden, massive air base attack at the outset of a NATO conflict could prove invaluable by denying the Pact an opportunity to gain an unrecoverable advantage.

Drone/RPV's offer an even wider range of basing options for survivability than V/STOL systems because they can be designed to be interchangeably air or zero ground launched and recovered. This flexibility would allow them, as an aid to ground survival, to be based in-theater at widely dispersed sites or employed from host aircraft operating from sanctuary bases located outside the combat area. Aside from having a potentially high degree of basing survivability, drone/RPV provide a possibility for penetrating and operating in hostile environments where the expected high loss-rate might tend to prohibit or constrain operations by manned aircraft.

Numerous studies and analyses, both military and civilian, have explored the applicability of drone/RPV systems to modern aerial combat. Conceivably, unmanned aircraft can perform tasks across the spectrum of warfare. Even though it may take considerable time for technology to reach the point where the concepts for some of the more sophisticated applications are realized, existing technology does enable a wide range of options for performing the simpler tasks to supplement or substitute for manned aircraft. Because drone/RPV can be made smaller and more maneuverable than manned aircraft, they are expected to be less vulnerable to both air-to-air and ground-to-air defenses in an intensely hostile environment. For this reason, including drone/RPV in the force mix can add a new dimension to the deterrence



value of TACAIR power. For even if air base attack were made less desirable by a V/STOL capability, the Pact nations still might be tempted to attack if they felt that their air defenses could neutralize or greatly reduce the effectiveness of NATO manned TACAIR forces over the battlefield.

However, with all their potential advantages, drone/RPV alone will not provide a panacea. The more sophisticated tasks that they are expected to perform—such things as selected types of surveillance, reconnaissance, defense suppression, and strike or strike designation against some categories of fixed targets—will require secure, reliable communications between the vehicle and its remote controller. Therefore, while drone/RPV might add much to TACAIR survivability and combat effectiveness, this contribution is contingent upon maintaining a somewhat vulnerable data link for all but the simpler missions where the tasks can be preprogrammed into the vehicle. To preclude a catastrophic loss of capability, there must be a hedge to ensure that the complex tasks can be performed even if the enemy should succeed in negating a drone/RPV force by breaking the communications links.

Retaining manned aircraft in the force ensures that some residual, integral capability will continue to exist. For even if there were no interface with the Tactical Air Control System, a manned aircraft

still could operate with some degree of effectiveness. Technology is nowhere near capable of producing an electronic computer that can duplicate the functions of the human brain—especially the ability to create or innovate unprogrammed alternatives and synthesize this information into useful form—much less be small enough to fit into the cockpit of an aircraft. Therefore, in order to preserve an adequate, self-contained command and control capability, some major portion of the force will probably have to consist of manned systems for the foreseeable future.

THE EXISTENCE of a significant TACAIR force that could not be readily neutralized should make an all-out, surprise attack on major NATO air bases less productive and therefore less desirable for Pact leaders. It appears that a high-low mixed force of manned and unmanned and conventional and zero launch/recovery aircraft could optimize TACAIR ground survivability and combat capability and, in doing so, greatly increase its value as a deterrent.

*Hq USAF*

#### Notes

1. Report of the Secretary of Defense James R. Schlesinger to the Congress on the FY 1975 Defense Budget and FY 1975-1979 Defense Program, 4 March 1974, pp. 87-88.
2. *Ibid.*, p. 143.
3. *Ibid.*, p. 91.

The strategic nuclear weapons are the back-up for the tactical battlefield and serve as a warning to the Warsaw Pact nations that massive retaliation is possible if they were to initiate aggression against us. These weapons are the final and the most important deterrent, but they too are not by themselves a rational or credible bar to local aggression or local intimidation.

General Andrew Goodpaster, USA

*Air interdiction operations are conducted to destroy, neutralize, or delay the enemy's military potential before it can be brought to bear effectively against friendly forces.\**

**I**NTERDICTION has traditionally been one of the primary projections of air power. The very nature of air forces gives them the ability to attack important targets outside the range and surveillance of friendly ground forces, and the doctrine of air interdiction is well tried and more-or-less universally accepted.

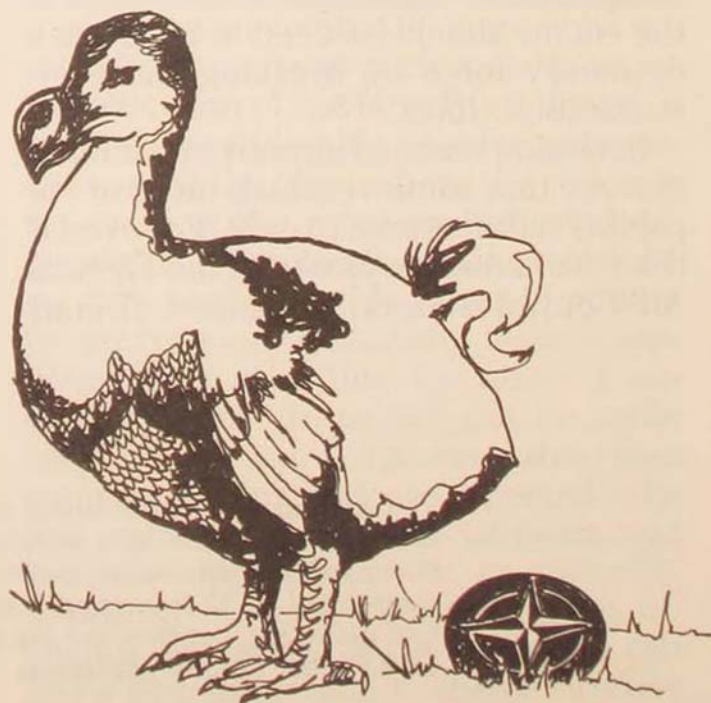
However, when one considers the potential European battlefield of the future, several factors assume increasing significance, particularly with regard to the deep interdiction role of NATO's air forces. The Warsaw Pact forces now have an extensively deployed and relatively powerful air defence capability. They also have large military stockpiles near the borders adjoining NATO countries. These facts, coupled with an appreciation of the extent and multiplicity of the East European network of surface communications, must raise doubts about the utility of risking excessive losses of very expensive and highly sophisticated aircraft in attacking interdiction targets of possibly marginal value.

The purpose of this article is to examine the validity of the current U.S. Air Force doctrine of deep interdiction, in the light of the foregoing and of the inevitable high priority demands for oth-

## AIR INTERDICTION IN A EUROPEAN FUTURE WAR

### *Doctrine or Dodo?*

WING COMMANDER ALAN PARKES,  
ROYAL AIR FORCE



\*AFM 2-1, *Tactical Air Operations — Counter Air, Close Air Support, and Air Interdiction.*

er, and perhaps more urgent, uses of tactical air power in the European theatre.

### War in Europe

Any attempt to forecast the exact nature of a future war in Europe is likely to be unsuccessful. There are too many imponderables. Factors such as cause (accidental, evolutionary, or premeditated), preparedness (surprise or identifiable "build-up"), area of initial attack (centre or flanks), and initial strategy (conventional or nuclear), would all have a bearing on the subsequent course of the battle. Although there are many different opinions as to the nature of such a war, there is almost total unanimity regarding its length. A future war in Europe would be a short war. And this must be a prime factor in determining the value of interdiction. For while its effectiveness is undisputed in a long war of attrition, it becomes open to question in, say, a thirty-day war.

#### *interdiction's contribution to the battle*

The traditional targets for air interdiction operations are the sources of military weapons, supplies and equipment, and the lines of communication along which they and the troops must flow to sustain the enemy's war effort. In particular, concentration points and stockpiled supplies provided relatively lucrative targets for interdiction. In the past, the main benefits of interdiction have stemmed from its long-term effects in reducing the enemy's capacity to continue the battle. However, it has always had two major shortcomings. The first lay in the extreme accuracy or the heavy concentration of weapons required to deny effective use of communications systems to the enemy. The second lay in

the relatively short time which elapsed before the enemy succeeded in reopening the route or in finding an alternative one. The former disadvantage has, to a large degree, been resolved by advent of precision guided munitions (PCM's).

In the European arena, the second disadvantage is compounded—at least in the Central Region—by the increasingly interlinked network of roads and railways of the Warsaw Pact infrastructure and the increased provision of tracked vehicles for their forces. In this environment it begins to look as though the results of long-range interdiction would achieve too little and too late to have a significant effect on the outcome of a "short" war.

All this is not to say that there would be no fruitful and important interdiction targets in a future European conflict. Weapon stockpiles and troop concentrations just to the rear of the main battle area could provide excellent short-range interdiction targets. However, although those nearest to the front line might be vulnerable to surface-to-surface attack, they would all undoubtedly be well protected against air attack. This raises the question of penetration and location.

#### *penetration, target acquisition, and destruction*

The widespread deployment of fixed ground-to-air missile defences, coupled with the ever increasing numbers of Warsaw Pact fighter aircraft, has vastly increased the penetration problems of interdicting aircraft. Fortunately, the situation is somewhat ameliorated by the aircrafts' additional freedom (in terms of speed, routing, and evasive manoeuvres en route to the target) brought about by the advent of greatly improved navigational and target-acquisition avionics.



However, all Soviet army divisions are now provided with highly mobile, indigenous air defence "systems"—in the form of AAA (ZSU 23/4), SAM 4 "Ganef," and SA-7 "Grail." In this environment, the prospect of relatively small numbers of interdiction aircraft successfully immobilising enemy reserve divisions, poised to the rear of the battle area, becomes increasingly remote. Moreover, the Yom Kippur War proved that concentrated air defences can take a heavy toll of attacking aircraft.

It follows, therefore, that penetration chances would be enhanced if interdiction forces could be provided with suppressive electronic countermeasure (ECM) escorts and could attack in large numbers. But the question now arises: Are sufficient aircraft likely to be made available for such tasks, in the face of other demands for their "services"?

#### *air power priorities*

Present Warsaw Pact conventional force deployments in Europe point to a strategy of large concentrations of armour, employed to achieve a rapid breakthrough of the NATO defences of the Central Region. NATO strategy is designed to slow down or halt such a penetration for a period long enough to allow a political dialogue before recourse to tactical nuclear weapons becomes inevitable.

In such a situation, it is probable that the main demands placed on air power would be for close air support and counterair operations. Multipurpose aircraft are most likely to be employed for these roles rather than for interdiction—particularly long-range interdiction—which would be of marginal utility in terms of its contribution to the immediate battle.

#### A Revised Concept

In light of the foregoing, adherence to the doctrine of interdiction in the early stages of a war in Europe becomes very questionable.

Nevertheless, there is a major role for interdiction aircraft at a later stage in the battle. For if the enemy's initial assault should prove to be uncontainable by conventional means, then his reserve troop and armour concentrations and his tactical nuclear weapon stores—behind the immediate battle area—could become critical targets for interdiction with tactical nuclear weapons. To fulfill this role, it would be necessary to withhold certain interdiction-specific aircraft (and appropriate early warning [EW] penetration-support aircraft) from the conventional phase of the war.

IN ANY FUTURE war in Europe, conventional attacks on traditional interdiction targets, while contributing little to the immediate battle, would probably result in significant losses of interdicting aircraft. It follows, therefore, that multirole aircraft are likely to be more productive in priority counterair and close air support than in interdiction. However, should conventional defence fail, short-range interdiction with tactical nuclear weapons would probably constitute an essential element of the subsequent battle.

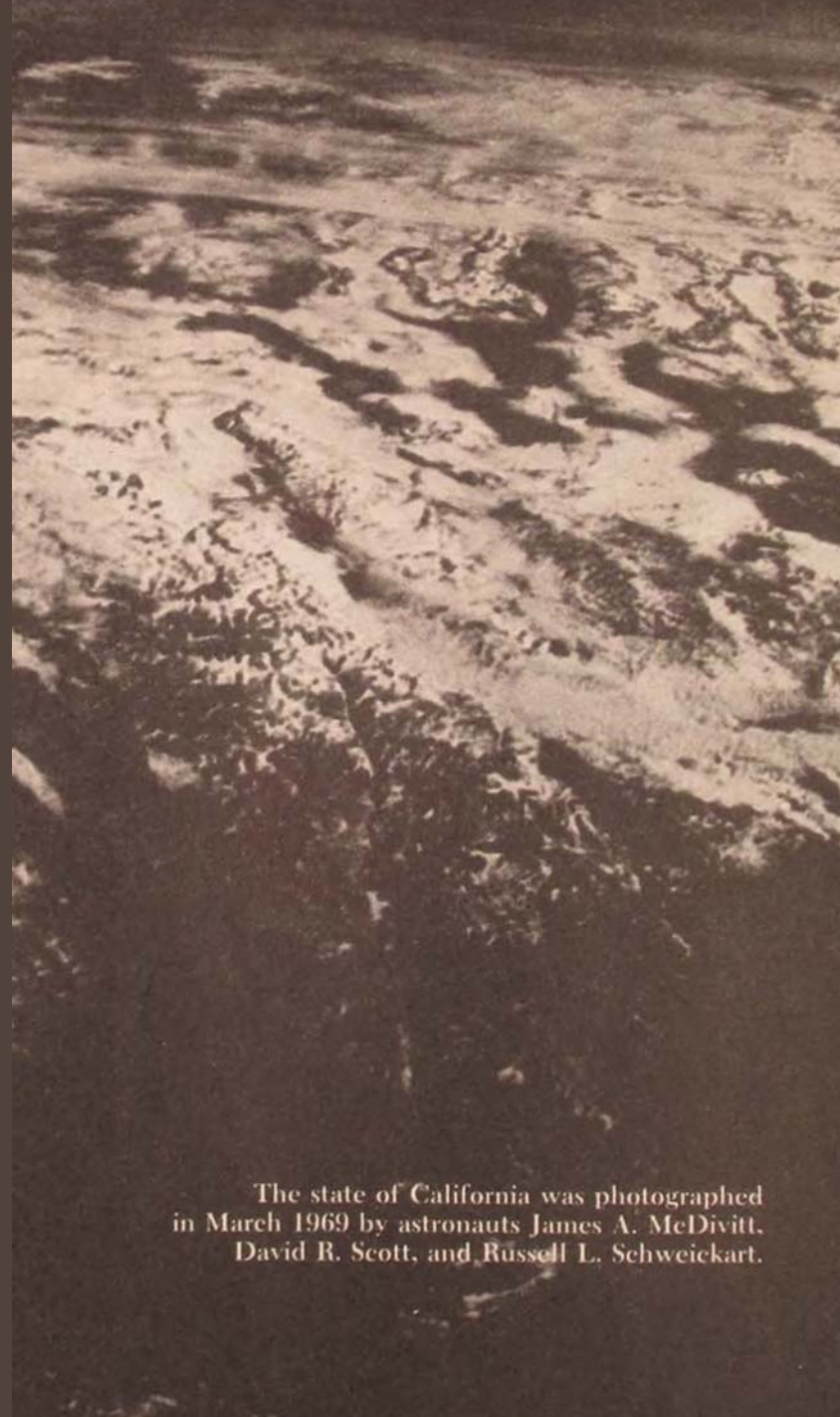
Interdiction, therefore, unlike the Dodo, is not quite extinct. But its continued survival, in a European environment, probably depends upon its ability to lay nuclear eggs! Perhaps the present concept of interdiction should be amended to reflect this.

*Air War College*



# THE SPACE SHUTTLE AND VANDENBERG AIR FORCE BASE

MAJOR GENERAL R. C. HENRY  
MAJOR AUBREY B. SLOAN



The state of California was photographed  
in March 1969 by astronauts James A. McDivitt,  
David R. Scott, and Russell L. Schweickart.



IN April 1971 the Shuttle Launch and Recovery Board, consisting of National Aeronautics and Space Administration and Department of Defense personnel, was established to review possible launch and recovery sites for the then recently approved National Space Transportation System. Their job was to evaluate proposed sites against stringent operational requirements; rank the sites; and present the findings to the NASA administrator. When the Board was formed, the Shuttle system consisted of a manned flyable booster and a manned orbiter. The booster-orbiter combination was to take off vertically like a rocket, but both stages were to land like airplanes. This capability implied site requirements quite different from those needed at Kennedy Space Center, Florida, and Vandenberg Air Force Base, California, up to that time. This new requirement prompted spokesmen in forty states to request the location of the launch and landing site within their state. These potential sites, when added to areas already identified by NASA, resulted in a total of some 150 contending locations.

In March 1972, NASA selected the ballistic, water-recoverable, solid-rocket-booster concept and fully defined the Shuttle vehicle configuration.

#### Potential Launch Site Evaluations

Because of the vast area required for impact of the unguided droppable booster and for possible emergency jettisoning of the very large hydrogen-oxygen tank, no suitable inland site could be found which would also provide more than just a few acceptable launch azimuths. Coastal sites afforded multiple azimuths as well as much greater flexibility to adapt to changes in the program.

Thus, Board consideration was eventually limited to coastal sites. These sites were screened to consider booster impact zones, ground track of ascent sonic boom, landing field requirements, buffer zones to surrounding communities, and available launch azimuths.

West Coast areas except for Vandenberg were eliminated because of terrain limitations and because existing community development would impede or prevent necessary land acquisition. The East Coast north of Chesapeake Bay was eliminated because it was unlikely that the government could acquire sufficient land for the site. Sites in North and South Carolina offered clear azimuths, but mainland areas had well-established and growing resort communities and the adjacent islands were too small to accommodate the site.

Thus, on each coast only two existing sites survived extensive surveys, and both these sites had limitations:

a. Vandenberg could provide near polar and retrograde azimuths but could not provide easterly launches.

b. Kennedy Space Center could provide easterly azimuths but could not provide azimuths for polar or sun-synchronous orbits. Southerly headings would have booster impact on land. Northerly launches would cause the orbiter and external tank to overfly highly populated areas of the United States and Canada.

Investigation along the Gulf Coast found an area in Matagorda County, Texas, that had potential to accommodate much of the total program. This site apparently had cleared areas for booster impact and recovery, and the area seemed sufficiently free of existing development to warrant further investigation.

Screening, in the wake of booster selection, resulted in two final site options:



a. a single Gulf Coast area (Matagorda, Texas),

b. a dual site with East and West Coast installations at Kennedy Space Center and Vandenberg.

A cost analysis showed that to construct and equip a new site for Shuttle operations would require an investment in excess of \$300 million more than the cost of achieving the same capability at the two existing launch sites, Kennedy and Vandenberg. The analysis also showed that the cost savings in operation of the single site versus that of the dual site did not overcome this significant differential in initial investment cost and

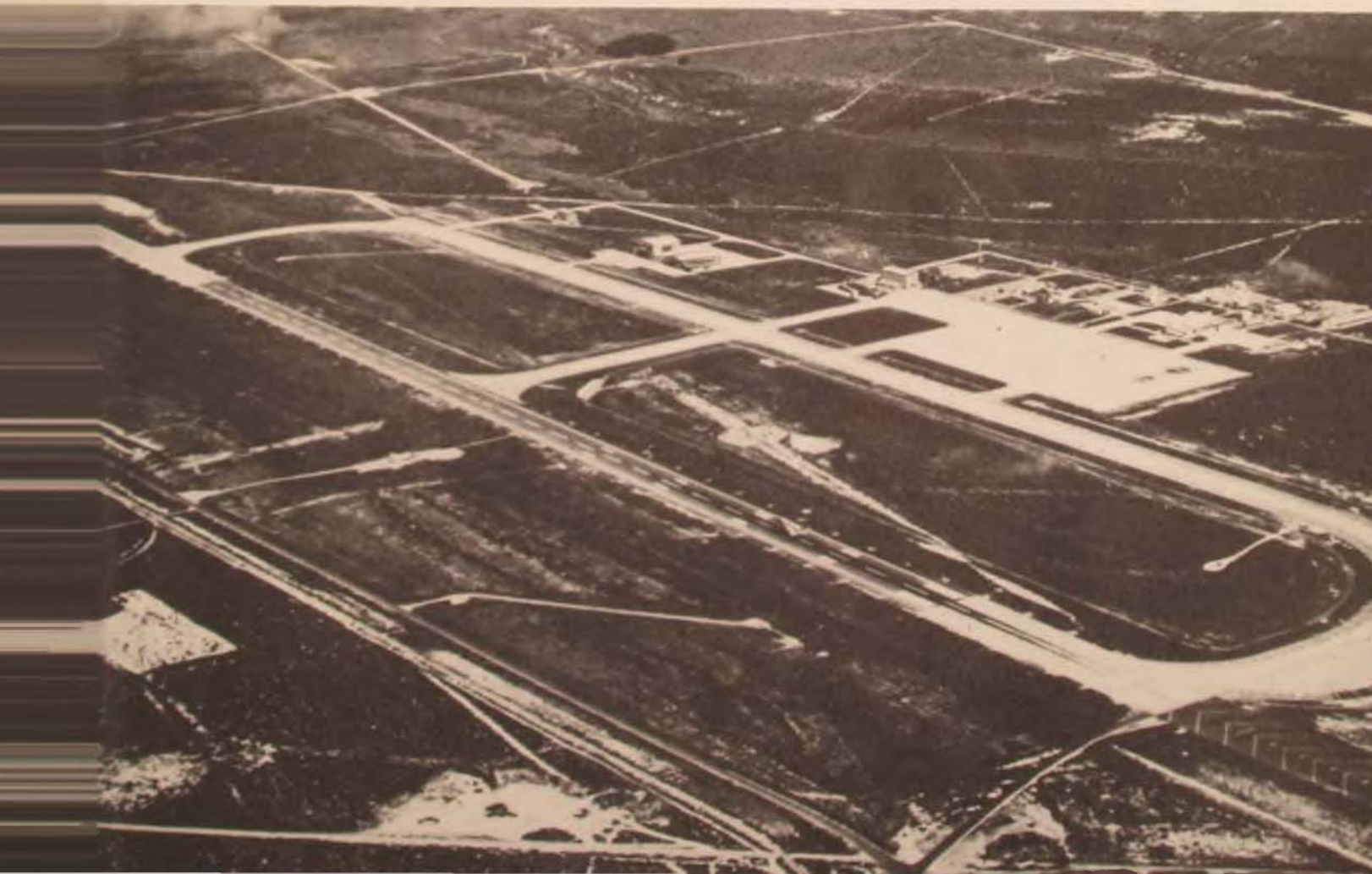
added costs of phasing in the operations at a new site.

Locating a launch and landing operation of the dimensions of the Shuttle on an undeveloped geographical area such as Matagorda County, Texas, would have required significant additional federal funds to provide or improve community services such as water, sewage, schools, highways, hospitals, fire and police, post office, etc. Kennedy and Vandenberg jointly could satisfy the national launch requirements and already had the capability to meet all such foreseeable needs.

In more than ten years of operating experience, the environmental impact of

#### **Vandenberg Air Force Base Runway Area Shuttle Facilities**

*At the end of its mission an orbiter touches down at Vandenberg, the runway extending to the northwest with orbiter maintenance facilities beyond. A minimum of new construction is needed at Vandenberg, compared to what would be required had the existing SLC-6 not been used.*



launch programs at both Kennedy and Vandenberg was wholly acceptable. As the Shuttle program was within the limits of NASA and U.S. Air Force experience with Saturn and Titan vehicles, the Board presumed the experience would be directly applicable to the Shuttle program. Launch azimuths were available that would place ascent sonic booms over water, where their effects would be acceptable. Adequate buffer zones were available so that acoustic levels during launch would not exceed acceptable levels in surrounding communities.

In summary, the Board found no clear economic advantage in establishing a new single launch site or clear-cut mission or operational advantage over what existed in the two existing locations. Thus, in April 1972, Kennedy Space

Center and Vandenberg Air Force Base were selected as the Shuttle launch and landing sites.

### Use of Vandenberg Facilities

Following selection of Vandenberg AFB as the West Coast launch and landing site, studies were started to define the operating philosophy and facility requirements. Potential launch sites on north Vandenberg, the Bear Creek area, and south Vandenberg were investigated with emphasis on the old Manned Orbiting Laboratory (MOL) facility, Space Launch Complex 6 (SLC-6).

In July 1974, a Special Study Task Team was formed at Space and Missile Systems Organization (SAMSO) to define a minimum-cost operations concept for

### SLC-6 Modified for Space Shuttle

*The Space Shuttle vehicle, as it would look on the modified SLC-6 launch pad, stands ready for launch. The existing flame bucket (to be used for the orbiter main engines), the two new flame ducts (for the solid rocket boosters), the mobile Payload Changeout Room, the existing Launch Control Center, and the existing solid rocket booster storage area are all clearly shown.*





Vandenberg. Technical assistance to the study team was provided by Aerospace Corporation and the ground operations contractor, Martin Marietta Corporation. Representatives from NASA, the U.S. Navy, Air Force Logistics Command, Military Airlift Command, and Space and Missile Test Center also assisted.

Technical, operational, environmental, and economic factors were evaluated for three siting options and four system concepts. Environmental considerations and cost comparisons eliminated north Vandenberg and the Bear Creek areas. The old MOL site (SLC-6) calculations showed that sound levels beyond the recommended levels could be contained entirely within Vandenberg boundaries. From an overall environmental impact point of view, SLC-6 was the best alternative. Cost analysis showed that use of SLC-6 would be cheaper by more than \$100 million than the previous baseline concept of two all-new launch pads.

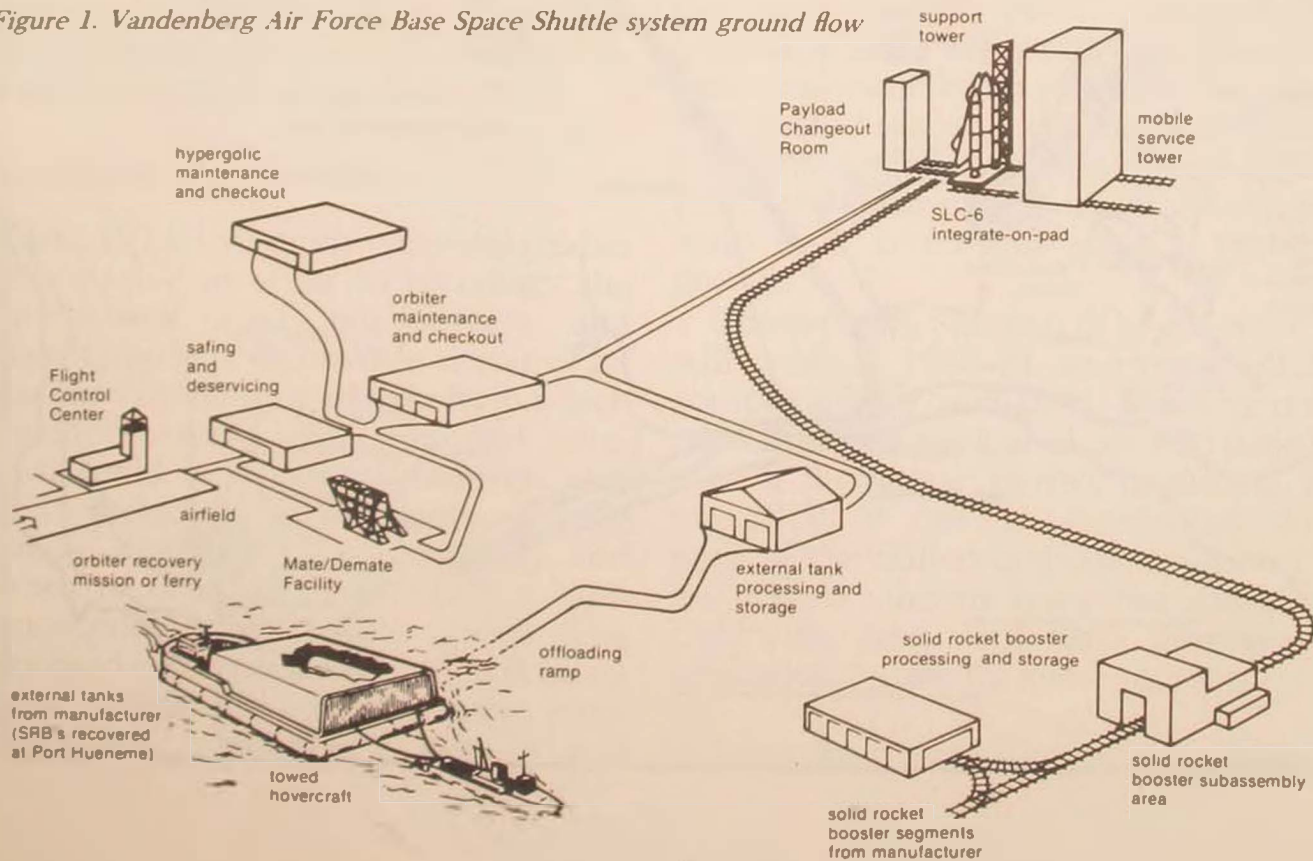
Edwards AFB, California, was investigated for possible use as the primary landing site instead of Vandenberg. The study team found that unacceptable environmental problems associated with orbiter abort return and lack of orbiter cross-range performance precluded the use of Edwards as a primary landing site.

The study team findings were presented to the DOD Space Transportation System (STS) Committee in November 1974 and to the Aeronautics and Astronautics Coordinating Board in January 1975. The SLC-6 option was approved and officially became the current baseline configuration.

*Vandenberg operations concept*

This baseline configuration groups all orbiter-related activities around the airfield at north Vandenberg and all booster-related activities around SLC-6. Briefly, the flow of the Space Shuttle elements is shown in Figure 1. All opera-

Figure 1. Vandenberg Air Force Base Space Shuttle system ground flow





tions will begin at the runway with delivery of the orbiter via 747 at the Mate/Demate Facility (MDF) or at end-of-mission (EOM) on the end of the runway. At EOM the orbiter will be towed to the Safing and Deservicing Facility (SDF) for safing of the ordnance systems and purging of the fuel systems. The orbiter will then be towed to the Orbiter Maintenance and Checkout Facility (OMCF) for payload removal and scheduled and unscheduled maintenance. After refurbishment, the orbiter will be loaded on a transporter and moved to the launch pad, a distance of about fifteen miles.

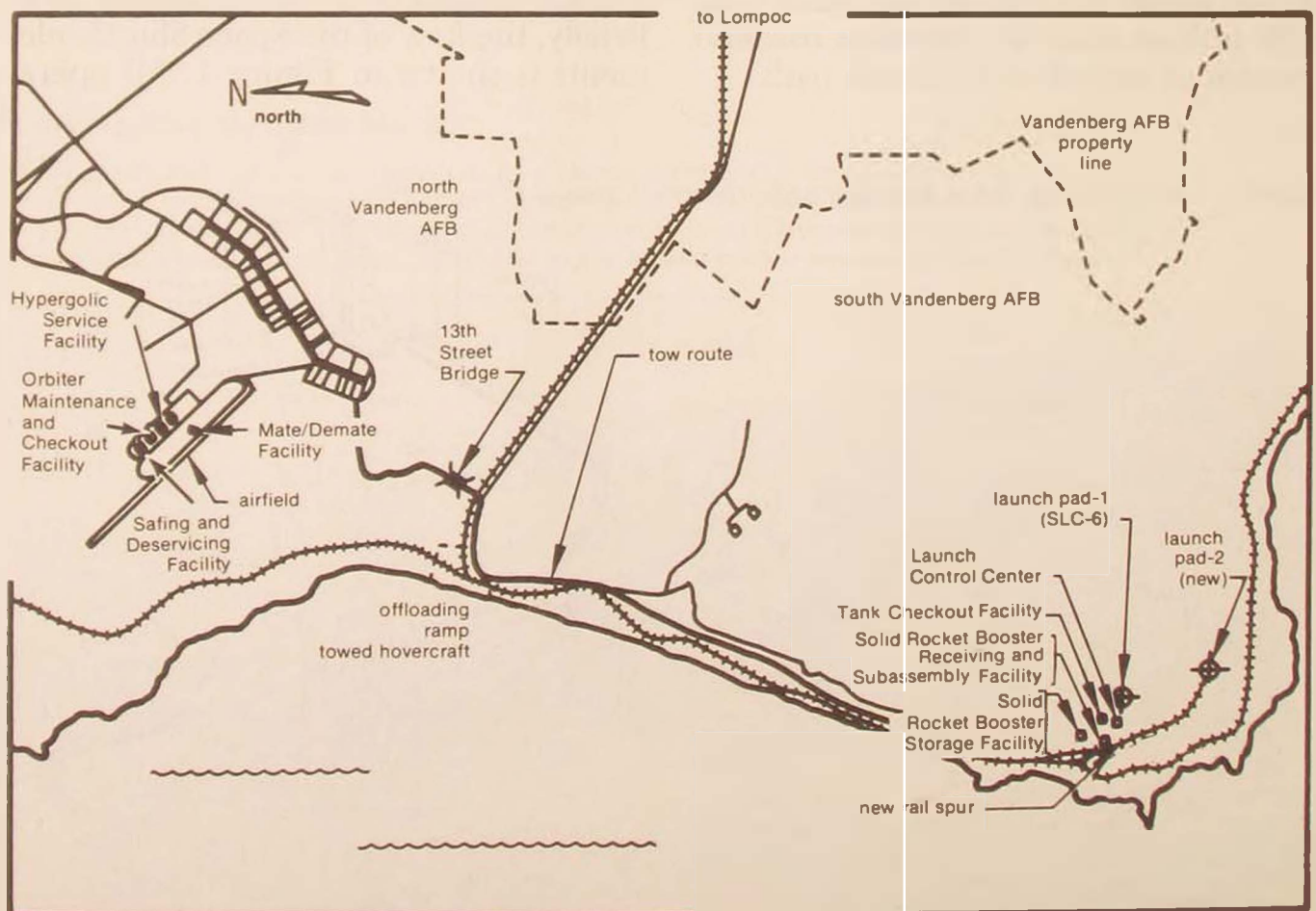
Solid rocket booster (SRB) segments will arrive by rail, be stored, and subsequently moved to the launch pad for as-

sembly. The external tanks will arrive by NASA barge at Port Hueneme, be transhipped to Vandenberg, stored, and checked out prior to movement to the launch pad. The Space Shuttle vehicle will be built up on the launch pad; SRB's first, then the external tank, and finally the orbiter. Payloads will be checked out in the Payload Changeout Room (PCR) and then installed into the orbiter cargo bay.

Recovered SRB's will be brought back to Port Hueneme for washdown and then shipped to Vandenberg for disassembly and refurbishment. The solid segments will be returned to the manufacturer for refurbishment.

The siting map, Figure 2, shows the

Figure 2. Vandenberg Air Force Base Space Shuttle system siting



location of the various facilities on Vandenberg. The map indicates the proposed siting of a second shuttle launch pad, should the need develop, about 1½ miles south of SLC-6. Not shown are the solid rocket booster recovery facilities and temporary external tank storage facilities at Port Hueneme.

Current Air Force planning programs the start of construction for early 1979, with expansion of the airfield and modification of the SLC-6. Scheduling of construction has been adjusted where possible to make maximum use of NASA experience. For instance, NASA will complete approach and landing tests at Edwards AFB before runway construction is begun at Vandenberg; thus, we can use NASA data in the runway design. Orbital flight testing from Kennedy Space Center will begin about the time we start construction on SLC-6; thus, we can reflect operational launch data in our launch pad construction before we are too far along. Finally, more than forty launches will have taken place from KSC before our first launch in December 1982, affording us some 2½ years of operational experience to draw on.

#### *environmental considerations*

In late 1974, five environmental studies were started in order to inventory the Vandenberg area qualitatively and quantitatively and provide a source of baseline environmental data from which a comprehensive environmental statement could be prepared. Subjects covered included archaeology, marine biology, meteorology, paleontology, and terrestrial ecology. In late 1975 a sixth socioeconomic study was added. The proposed construction activity will be assessed against the comprehensive environmental baseline data and

documented in an environmental statement to be published in early 1977.

#### *socioeconomic impact*

Construction and activation of the STS facilities at Vandenberg will require a modest-size labor force. Detailed information on the socioeconomic structure of communities near Vandenberg is being compiled and analyzed to determine effects of this labor force and its implications (e.g., the so-called "multiplier effect"), both beneficial and adverse. Results of this study will be available later this year. We can, however, at this time make some generalized comments.

Existing space programs and their immediate follow-on programs will continue at Vandenberg at levels not too different from those at present until the Space Shuttle is phased into operation in early 1983. It seems reasonable to project base employment at or near present levels through mid-1982, and that base employment will increase during the transition period when space programs using expendable booster systems are phased out and their facilities deactivated as the Space Shuttle system is phased in. Following the transition period, total base employment should remain as it is now or show a modest growth.

Construction planned to begin in 1979 will peak in 1980-81 and taper off to completion by mid-1982. Construction personnel will peak at about 600 people over a three-year period beginning in mid-1979. It can be anticipated that most of the skilled construction personnel will be drawn from the southern California area with little permanent relocation to the Vandenberg locale.

IN SUMMARY, we are striving to prepare a

minimum cost installation that considers not only mission performance requirements but also environmental implications. This facility at Vandenberg AFB will enable the Shuttle, with its greater flexibility, versatility, and payload capability,

to lower the cost of space operations substantially and thus enable this nation to accomplish missions that otherwise might be unduly delayed or even unattainable.

*Space and Missile Systems Organization*

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The challenge today is to maintain military effectiveness by incorporating current technologies into our systems. The challenge tomorrow can be met only if we maintain the tradition of ambitious scientific and engineering creativity and commitment which has made America the world leader throughout this century.

General William J. Evans, USAF  
*Strategic Review*, Summer 1976



LATIN  
AMERICA:  
MILITARY-STRATEGIC  
CONCEPTS

LIEUTENANT COLONEL JOHN CHILD, USA



THE CONCEPT of Latin America held by United States military strategic planners has varied considerably in the nineteenth and twentieth centuries, reflecting fundamental changes in the relations between the United States and the other American republics.

Any attempt to isolate and identify U.S. strategic approaches to Latin America is complicated by the fact that at any given moment there may be several competing strategies. At times these military-strategic conceptions converge with the overall political and diplomatic strategy toward Latin America; at times they diverge and tend to produce conflict within the foreign policy decision-making machinery. Further complicating the process of identifying military strategies is the matter of priorities as the global strategic concerns of the United States make it necessary to assign a less-than-high priority to Latin America.

#### Eight U.S. Military-Strategic Concepts

Despite these complications, it is possible to discern a series of strategic conceptions of Latin America that have been held at one period or another by U.S. military strategists:

- the American Lake
- benign neglect
- quarter-sphere defense
- hemisphere defense
- special bilateral relationships
- “secondary space”
- the Atlantic triangle
- the antifoco.

*the American Lake concept (mid-nineteenth century to 1933)*

This strategic vision, which was the primary military strategy until the advent

of the Good Neighbor Policy, saw U.S. strategic concerns in Latin America predominantly (sometimes exclusively) in terms of the Caribbean. During the 1898–1933 period the Caribbean was frequently referred to as the “American Lake” or the “American Mediterranean.”<sup>1</sup> (See Figure 1.)

The strategic conception of Latin America in terms of the American Lake is based on the overwhelming importance of the Caribbean in U.S. relations with Latin America:

—Eleven of the Latin nations are “Caribbean.”

—The Caribbean is the main U.S.–Latin American interface.

—Major U.S. trade routes (both national and international) cross the Caribbean.

—U.S. control of the Caribbean denies a hostile power access to the soft underbelly of the United States.

—Control of the Panama Canal allows U.S. naval forces to be rapidly shifted from one ocean to the other. Although this factor is not so decisive at present, in the dark days immediately after Pearl Harbor it was one of the cornerstones of U.S. naval strategy.

Underscoring this strategic conception is the fact that for many years U.S.–Latin American policy was in effect a Caribbean policy, with little attention being paid to the rest of Latin America. Our diplomacy, investments, interventions, and strategic concerns were focused almost exclusively on this area in the nineteenth and early twentieth centuries.

As advocated by Admiral Alfred Thayer Mahan and Theodore Roosevelt, the American Lake concept is clearly related to the Manifest Destiny, Big Stick, and Dollar Diplomacy facets of U.S.–Latin





Figure 1: The American Lake



American relations.<sup>2</sup> This concept belongs in the category of the "America for the [U.S.] Americans" modification of the Monroe Doctrine and is also in the "realistic" current of our foreign policy in that it converged with the overall political and diplomatic policies of the United States toward Latin America until the inception of the Good Neighbor Policy. In serving these needs the concept ran counter to the growing Pan-Americanist current in the early twentieth century and was a growing irritant in U.S.-Latin American relations.

Franklin D. Roosevelt's Good Neighbor Policy toward Latin America was based on initiatives taken in the last years of the Hoover administration. It was clearly incompatible with the American Lake strategic concept, forcing a departure from this approach in the early 1930s.

#### *benign neglect concept (1933-1939)*

The abandonment of the American Lake strategy created a void from 1933 to 1939 in U.S. strategic approaches to Latin America. This vacuum was benign in the sense that the United States was improving relations with Latin America but can also be labeled "neglect" in that the U.S. had no military strategy for Latin America and almost no presence in that area, a situation that is understandable in the absence of any perceived threat. U.S. military interventions in the Caribbean ended when troops were withdrawn from occupation duty in the Dominican Republic, Nicaragua, and Haiti by 1934. With the exception of less than a dozen attachés and two small naval missions in Brazil and Peru, the U.S. military was indeed benignly neglecting Latin America.<sup>3</sup>

The strategic vacuum resulting from

the abandonment of unilateral military measures was not replaced by bilateral or multilateral military strategies until the outbreak of World War II, when it became evident that this strategic void had to be filled. Although some U.S. military strategists in the late 1930s argued for a return to the American Lake concept, the strategic debate just before World War II involved the conflict between the quarter-sphere and the hemisphere defense concepts.

#### *quarter-sphere defense (1939-1942)*

The quarter-sphere defense concept held that U.S. military strategic concerns in Latin America should be aimed at establishing a limited but defensible perimeter against the external enemy. This perimeter would have embraced the northern half of the Western Hemisphere (hence, "quarter-sphere") and the area contained within a line running from Alaska to the Galápagos Islands in the Pacific, across South America to the Brazilian "bulge" at Natal, then north to Newfoundland.<sup>4</sup> (See Figure 2.)

The quarter-sphere defense line was essentially the optimum World War II outer defense perimeter of the continental United States. As such, it involved Latin America only to the extent that specific areas of Latin America could contribute to the defense of the continental United States. Latin nations within the perimeter had a role to play and would be protected by the U.S.; those nations lying outside the perimeter were in effect neglected or given a very low strategic priority.

The quarter-sphere approach can be seen as an expansion of the American Lake concept to accommodate the technological and geopolitical realities of World War II.



Figure 2: Quarter-sphere defense



The line was extended to the Galápagos because Japanese aircraft operating from that point, or any closer, would pose a direct threat to the Canal. The Brazilian "bulge" was included because of its proximity (about 1500 miles) to Dakar in West Africa, a French colony. When France fell in 1940, all former colonies became potential Nazi bases, and those in West Africa were seen as a direct threat to easternmost South America, the logical beachhead for a move against the soft underbelly of the United States.

In the quarter-sphere defense concept, the Latin American military played no role except local defense of proposed U.S. bases and as protectors of sources of strategic materials. In fact, two of the basic tenets of the concept were the belief that most of Latin America was a strategic liability and a general disregard for her potential military contribution, with the possible exception of a Brazilian role in the defense of South Atlantic shipping.<sup>5</sup>

There is no clear-cut philosophical basis for the quarter-sphere since it is a pragmatic and realistic assessment of the optimum defense perimeter in the context of the war. Even though it can be seen as an expansion of the American Lake concept based on the philosophies of Manifest Destiny and the Big Stick, the quarter-sphere was not consciously tied to these policies, which had been officially abandoned by World War II.

One disturbing overtone of the quarter-sphere was the contempt it implicitly carried toward Latin America. The quarter-sphere was frequently presented in terms of the U.S. having no obligation to protect all of Latin America because of Latin America's lack of democratic values, political instability, and limited cultural or economic ties to the United

States.<sup>6</sup> Proponents of the quarter-sphere frequently ridiculed Latin American military forces and asserted that the only valid strategic objective the U.S. had in Latin America was narrow self-interest. Because of these overtones the quarter-sphere concept is fundamentally anti-Panamericanist and against the Bolivarian or original Monroe Doctrine precepts of the indivisibility of the Americas.

The quarter-sphere as a strategic concept was one of two poles in the debate on U.S.-Latin American strategy from 1938 to 1942. As an operational concept it died when Roosevelt and the State Department came out in favor of hemisphere defense in 1942, and the U.S. military departments reluctantly accepted the hemisphere approach. Nevertheless, it can be argued that although the Army and Navy departments verbally supported hemisphere defense in the 1942-45 war years, they were in practice carrying out a quarter-sphere policy by means of special bilateral relationships with key countries in the quarter-sphere.

#### *hemisphere defense (1939 to the present)*

In this strategic conception the defense of the hemisphere is seen as a collective responsibility shared by all members of the Pan-American system. (See Figure 3.) Although military realities dictate that some nations (e.g., the United States) will make a larger contribution than others, all the countries in the hemisphere participate in the planning and execution of its defense.

Proponents of the hemisphere defense concept argue that its genesis can be traced to Bolivarian Pan-American ideals (at the 1826 Panama Amphictyonic Congress, Bolivar had proposed a multinational hemisphere defense force) and



Figure 3: Hemisphere defense



the original expression of the Monroe Doctrine ("keep European conflicts out of the Americas"). An even more fundamental root is the idea that the Western Hemisphere has a geographic, historic, and cultural unity that sets it apart from the rest of the world.<sup>7</sup>

In the World War II context one man clearly emerges as the major proponent of the hemisphere defense idea: Sumner Welles, Assistant Secretary of State for Latin American Affairs. Welles was convinced that hemisphere political and economic solidarity in World War II could be achieved only if the Latin nations had a sense of participation in the military defense of the continent.<sup>8</sup> In this objective he was strongly opposed in 1940 and 1941 by the U.S. War and Navy departments, which argued that the only effective way to defend the Hemisphere (and the U.S.) was by bilateral agreements with key countries in the quarter-sphere. In effect, the U.S. military departments were arguing for the quarter-sphere on good military grounds while Welles was presenting the hemisphere defense concept as the indispensable military element necessary to gain Latin America's political, diplomatic, and economic cooperation in World War II. Welles was able to convince President Roosevelt to impose a compromise by which a multilateral military agency (the Inter-American Defense Board) would be created. The IADB had only advisory powers, thus leaving the U.S. military departments free to pursue substantive defense matters through their preferred bilateral channels.<sup>9</sup>

During the war years hemisphere defense was the military facet of the hemisphere's united front against the common and very real external threat of the Axis. Although all of the nations in the hemisphere did not feel the threat

with equal concern, there was a remarkable degree of unanimity on the issue of military cooperation during the war. The concept of hemisphere defense played a vital role by giving the Latin nations the sense of military participation so essential to the creation of hemisphere psychological solidarity in World War II.<sup>10</sup> The specific vehicle for developing this sense of military solidarity was the Inter-American Defense Board, which many observers see as having had more of a symbolic than a direct role in the war.

After the war the idea of hemisphere defense was embodied in the Rio Treaty of 1947 ("Inter-American Treaty of Reciprocal Assistance"). However, by 1947 the clear and present external threat had diminished, and the Rio Treaty fell far short of being a military alliance in the sense of NATO or even SEATO. For example, although the Rio Treaty does mention the use of military force as a possible (but nonobligatory) measure to be taken, it does not address the key questions of structure, organization, or planning for the use of this force.

The hemisphere defense idea remains a viable operational strategic concept to the present and formed the rationale for the U.S. Military Assistance Program in Latin America during the postwar period until the Kennedy years. The validity of the concept in recent years has been somewhat undermined by diverse perceptions of the nature of the threat to be defended against.

*special bilateral relationships (1942 to the present)*

This strategic concept views Latin America in terms of substantive bilateral relationships with a very few Latin American nations which can make a direct, positive contribution to rather nar-



Figure 4: Special bilateral relationships



rowly defined U.S. military strategic interests. (See Figure 4.) Multilateral military relations exist but only on a token basis.

The Latin nations selected for the special relationships are those which by virtue of location, long historical association, or vital assets play a key role in a "realistic" U.S. hemisphere strategy. Some of these special relationships have long antecedents:

—Brazil, which has had an "informal alliance" with the U.S. since the late nineteenth century.<sup>11</sup>

—Mexico, whose relations with the U.S. have fluctuated greatly over the years, but whose proximity and 2000-mile border make her loom large in any U.S. hemisphere strategy.

—the Caribbean and Central American nations which were involved in Panama Canal considerations, either as actual or potential sites or by virtue of strategic proximity to the Canal.

During World War II these bilateral strategic relationships reached their peak due to the fundamental role they played in quarter-sphere defense. Using relations with Canada as a precedent (a U.S.–Canadian Permanent Joint Board on Defense had been created, based on the 1940 Ogdensburg Agreement), bilateral commissions were established: the Joint Mexican–U.S. Defense Commission (March 1942) and the Joint Brazil–U.S. Defense Commission/Joint Brazil–U.S. Military Commission (August 1942).

These commissions coordinated, and solved, the two fundamental U.S. World War II strategic problems in the hemisphere. One was control of the northeast Brazilian "bulge" in both defensive terms (denial of the area as a possible Axis beachhead and antisubmarine opera-

tion) and later in offensive terms (supply route to North Africa). The commissions also channeled Brazil's 80 percent share of U.S. Lend-Lease to Latin America when the 23,000-man Brazilian Expeditionary Force was organized to fight in Italy.

The other strategic problem was control of the southwestern approaches to the U.S. and the Caribbean across Mexico. Access to air bases in Mexico also provided an overland air supply route to the Panama Canal. The Joint Mexican–U.S. Defense Commission also coordinated the Lend-Lease and training support provided to the 300-man Mexican air squadron which fought in the Pacific.

After World War II these two special bilateral strategic relationships followed divergent courses. The Mexican one atrophied and demonstrated a clear reluctance to become too closely associated with the U.S. in military terms (for example, there is no U.S. military group in Mexico). The Brazilian special relationship flourished to the extent that postwar Brazil emerged as one of our closest strategic and diplomatic allies in Latin America.

Like the hemisphere defense concept, the special bilateral relationship strategy continues to be employed to the present.

#### *secondary space (the Cold War years)*

This Cold War strategic conception sees Latin America as belonging in a secondary and thus low-priority geographic area. In Cold War terms U.S. planners neatly divided the world into a "power belt" or "primary space" northern hemisphere and a third world "secondary space." (See Figure 5.) The "power belt" contained most of the world's industrialized nations and was the main arena in which nuclear confrontation and the

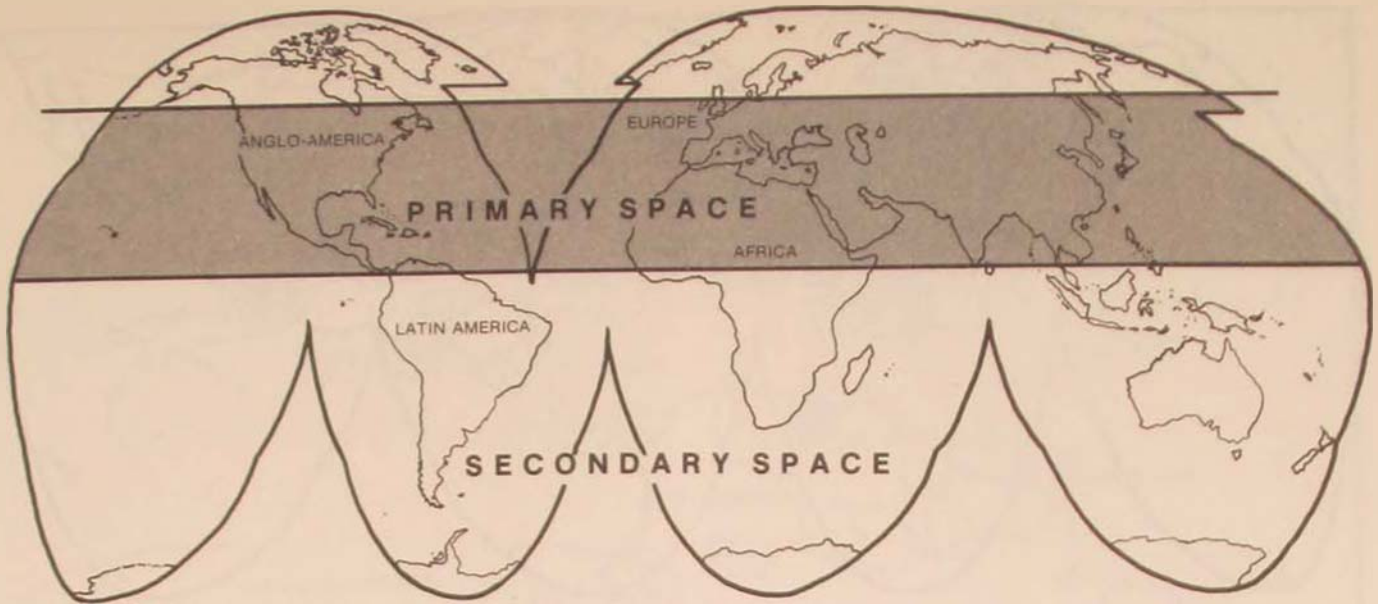


Figure 5: Secondary space

Cold War would be fought. The “secondary space” nations had the peripheral responsibilities of supplying strategic raw materials and staying locked into the spheres of influence of the first and second worlds.<sup>12</sup>

A somewhat similar idea is contained in a 1950 Department of Defense pamphlet<sup>13</sup> that divides the continent into three zones: the North American “buffer zone” (Alaska, Northern Canada), the North American “industrial zone” (U.S., Southern Canada), and the Latin American “material supply zone.”

Only on two occasions did Latin America become a primary theater in the Cold War. The first was the brief threat of a Communist government in Guatemala in 1954. The second and far more serious was the rise of Fidel Castro in Cuba and the subsequent attempt to export his revolution.

The unfortunate tendency on the part of U.S. strategic planners to assign a low priority to Latin America during the

Cold War eventually led to taking her support for granted. Although Latin America generally acquiesced in the assignment of a secondary role in the Cold War, the lack of attention paid to the area by the U.S. in the Cold War years caused a gradual erosion of U.S. leadership, prestige, and influence.

#### *the Atlantic triangle (proposed in 1955)*

This strategic vision sees Latin America as one of the apexes of a triangular security partnership comprising the United States, Western Europe, and Latin America based on common bonds and the common threat of Soviet expansionism. (See Figure 6.) In its more abstract dimension it argues the geographic, cultural, historic, and economic unity of the three apexes and concludes that the history of the Americas has no meaning unless it is related to the Atlantic triangle.<sup>14</sup>

The narrower specific military argument proposes the triangle as the strate-



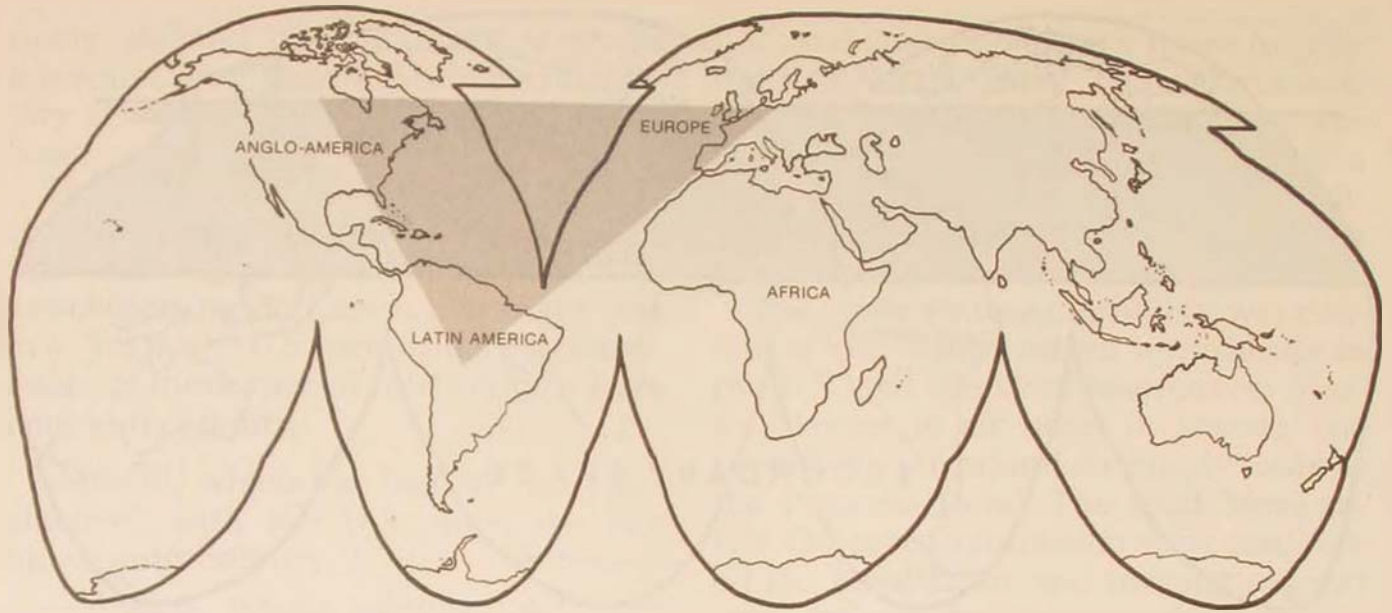


Figure 6: The Atlantic triangle

gic concept that would merge NATO and the Rio Treaty into a triangular alliance relationship.<sup>15</sup> Such a conception necessarily rests on the assumption that the Rio Treaty is, or could become, a tight collective security arrangement like NATO, which it clearly is not.

The Atlantic triangle strategic concept was proposed by Secretary of State John Foster Dulles at the height of the Cold War, but the idea was quietly dropped when it became evident that the majority of the Latin nations would not support what they perceived to be a militarization of the inter-American system.

#### *the antifoco (1960 to the present)*

The antifoco strategic concept was the counter to the Castro-Debray-Guevara “foco” strategy by which they attempted to export the Cuban Revolution to Latin America by converting the Andes into the Sierra Maestra of America. (See Figure 7.) A primary Castroite objective was to create “one, two, three, many Viet-

nam” in the hemisphere which would provoke U.S. intervention and overextend her military resources. The antifoco thus represents the application of counterinsurgency and nation-building concepts to the Latin American environment.

The first expression of the foco theory is contained in Che Guevara’s *La Guerra de Guerrillas* (1961) in which, contrary to traditional Marxist-Leninist theory, he argued that it is not always necessary to wait for all the objective conditions for a revolution since the guerrilla “foco” can create them. Castro’s effort to export the Cuban Revolution in the early 1960s put the theory into operation and caused great concern among U.S. military strategists. The concern was linked to a growing belief in the quasi-invincibility of the guerrilla in a Cold War nuclear stalemate among the major powers. Obsessed by the victory in Cuba, Guevara and Debray argued that objective conditions were not as important as the example set by the mystical guerrillas fighting



Figure 7: The antifoco



heroically in the mountain and jungle "focos."<sup>16</sup>

The proponents of the foco theory not only ignored the fatal lack of objective conditions in most of Latin America but also the corpus of counterinsurgency theory and techniques that were built up in the late 1950s and early 1960s based mainly on antiguerrilla experiences in Vietnam, Malaysia, and the Philippines. While some of the techniques were strictly military and tactical in nature, others were aimed at ways in which the guerrilla could be denied popular support and thus end up being, in Chairman Mao's metaphor, "a fish out of water." The most enlightened of these techniques was the civic action philosophy of using the military in projects that would better the social and economic situation of the population. The argument held that civic action would not only help eliminate the causes of insurgency but would also cause the population to support the government actively against the guerrillas.

In the early 1960s the new Kennedy administration, seeking a way to make its policy toward the Latin American military consistent with Alliance for Progress goals, seized upon the civic action concept as a means of providing a progressive and positive U.S. military strategy. This was reflected in the dramatic 1961-62 shift in rationale for the U.S. Military Assistance Program from hemisphere defense to the new realities of counterinsurgency and civic action. Sales and grants of equipment stressed those items suitable for nation-building, such as engineering and transportation vehicles. Training for Latin American military personnel provided by the U.S. stressed counterinsurgency tactics and the civic action concept. The limited amounts of purely military training and materiel

provided were justified on the grounds of contributing to the stability required for orderly development under the Alliance for Progress.

Although the antifoco remains an operational strategic concept, its importance peaked during the period of maximum Cuban attempts to export revolution and has diminished somewhat in significance since the humiliating defeat of Guevara and Debray in Bolivia in 1967.

The following themes emerge from analysis of U.S. strategic visions of Latin America:

- In the twentieth century there has been a gradual expansion of the operational U.S. strategic concept of Latin America in two dimensions: *geographic*, from the American Lake to the quarter-sphere to hemisphere defense; *organic*, from initial concern over defense against an external threat to concern over internal subversion and internal development.

- Paralleling the expansion aspect is the ebb and flow of the priority Latin America has in the global strategic outlook of the United States. This priority has ranged from very high, when a clear and present threat is perceived, to very low, when the threat recedes.

- U.S. strategic concerns in Latin America can also be seen in terms of the conflict between: the realistic-military approach held by most uniformed strategists, which stresses the relatively narrow and limited positive contributions that Latin America can make to the military defense of the United States; the diplomatic-political approach held mainly by State Department and academic Latin Americanists, which stresses the Pan-American ideal in terms of the diplomatic and political unity of the hemi-

sphere. It should be noted that the gap between these two approaches has narrowed since World War II as the Defense and State Departments have become increasingly aware of the interrelationship of political and military affairs.

The only identifiable strategic concept in which high priority military realism and diplomatic-political Pan-American ideals have converged has been in the antifoco strategy, a factor that does much to explain its relative success and acceptance.

Any attempt to project the relevance of these strategies into the future must carefully consider the implications of the apparent hiatus in Cuban attempts to export revolutionary warfare in Latin America; the rising tide of Latin American nationalism, to include unprecedented currents of military populism; the strategic impact of raw material shortages, especially in the energy field; and Isthmian canal negotiations.

With these new factors in mind, an analysis of the eight strategic concepts in terms of contemporary and future relevance would yield the following results:

- The American Lake, quarter-sphere defense, secondary space, and the Atlantic triangle concepts appear as anachronisms with little possibility of becoming operational.

- Benign neglect could dominate if Latin America further loses priority in U.S. eyes. Indeed, many Latin analysts argue that U.S. benign neglect for Latin America has been dominant since the death of Kennedy.

- Hemisphere defense remains viable as long as the hemisphere nations support the basic collective security arrangements embodied in the Rio Treaty and multilateral military institutions such as the Inter-American Defense Board. The concept's viability is somewhat undermined at present by lack of agreement on the nature of the threat to the inter-American system.

- Special bilateral relationships also continue to flourish, but they are modified by the new strategic issues identified earlier. The antifoco theory, which declined somewhat in importance with the death of Guevara, has received new attention with Castro's intervention in Africa.

Recent changes in the inter-American system suggest the possible emergence of a ninth strategic concept, as yet undefined but which would be linked to U.S. and Latin American attempts to reach a relationship of mature partners with differences but also with significant convergence of interests. Such a concept, tentatively labeled "the mature military partnership," could rest on both the ideals of hemisphere defense as well as the more pragmatic realism of special bilateral relationships. It remains to be seen if the inter-American system is sufficiently flexible and the convergence of interests sufficiently broad to permit this ninth strategic concept to become operational.

*Washington, D.C.*

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At the present moment in world history nearly every nation must choose between alternative ways of life . . . One way of life is based upon the will of the majority . . . The second way of life is based upon the will of the minority forcibly imposed upon the majority. It relies upon terror and oppression, a controlled press and radio, fixed elections, and the suppression of personal freedom.

I believe that it must be the policy of the United States to support free peoples who are resisting subjugation by armed minorities or by outside pressure.

Harry S. Truman:  
*Address to Congress,*  
*March, 1947; "The*  
*Truman Doctrine."*

I AM A THREE. I had never thought that way before—not until I got the copy of my latest Officer Efficiency Report.

How many times had I made that trip to the Personnel Officer Records Section? At least once for each of my 14 years in the Air Force. As a major who had gained a good reputation in my career field, I had a string of OER's to be proud of. A couple times I had hopes of a secondary zone promotion. Most of my Xs were on the far right side.

I should have known when the sergeant who brought me my records avoided looking me in the eye. That had never happened before.

A three! I had plummeted from excellent to average in one year. I was doing the same job—better—for the same people who had said I was wonderful last report under the previous OER system.



## I AM A THREE

*or how I learned to  
stop worrying  
and love the new  
OER System*

MAJOR MARK WYNN



The Personnel people had been briefing us for a long time that the new system meant business. Everyone knew that the old system was inflated. We excellent types knew there were average officers disguised with excellent OER's from raters who couldn't bring themselves to tell them what they were really worth.

But me? How could Wonderful Me get the shaft?

I accepted my fate stoically. I don't suppose I thought about it more than every five minutes for the next week or so.

I didn't discuss it with anyone except my wife, my rater, my reviewer, my Personnel people, the major command chief of my career field, and my immediate coworkers.

I have not told my kids. After holding my OER's up to them as an example of Daddy's report card, I haven't figured out how to explain Daddy isn't so hot after all.

As one of the most experienced and—so I have been told—successful people in my career field, I can't describe my feelings at having a worse performance report than any of the 12 people who work for me.

We all know the rating systems are different for civilians, enlisted personnel, and officers, but that is not much consolation. It sounds awfully much like an excuse.

All of us also know that the strict new OER system is not the most severe in the world. What are ten Air Force officers—limited to two One ratings, three Twos, and five Threes—compared to ten people in a lifeboat when the food runs out?

Just about everyone I bled on said what I expected to hear. My rater had only four officers to rate so he could not very well give more than a single One rating, and he and I both knew it be-

longed to this other really swell guy.

My reviewer had the impossible chore of ranking ten officers in such specialties as commander, services, information, logistics, operations, safety, security police, and several others.

When talking with my rater and reviewer, I assured them I understood that the Ones had to be the base and wing commanders of tomorrow, that the Twos had to be in the primary support areas of logistics, engineering, and the like, and that the Threes were for the soft-core areas like personnel, information, and others.

Neither rater nor reviewer would buy that. They said the usual things about tough system, hard choices, tight competition, overall record, potential, responsibilities, and hard work. Both spared me the single searing conclusion: "You are not as good as these other officers."

Maybe they don't think that. I'll never know. They are good commanders who said that they and many other people also were not rated up to their expectations by their raters and reviewers.

There is one difference: they are colonels near retirement. With my new rating, I'll be lucky to ever get silver leaves.

The Personnel people say, "No, that's not necessarily true. Promotion boards will continue to consider the whole man." I hope so.

One thing the previous system had was illusion. Many of us really did believe we could win eagles. A few hopeless cases even believed in stars.

Whatever the reality, the inflatable OER system let local commanders sustain their officers' dreams. Particularly when they had any doubt about which square deserved the X. An anonymous "they" was the cause of promotion failures.

Now local reviewers must make the rankings. Now local people have a local

face to match with that lost promotion. More accurately, local people may think they have a scapegoat, but still only the promotion boards will know what ultimately happens in their sessions.

Unable to accept my Three without better perspective, I talked with people at the major command level of my career field. I learned that some of my headquarters contemporaries, in less demanding jobs than running a base shop like mine, surpassed me in their ratings. (It was not easy to congratulate them convincingly.)

That is not surprising, however, when you think about it. Who best appreciates the achievements of a particular career field: the leaders of that career field or the base-level reviewers and raters who must judge many diverse jobs?

My biggest surprise came through the grapevine, which has almost completed piecing together who got what in the ten officers of my group. I correctly guessed the identity of only one of the two Ones. I am not sure who got the third Two, but I missed on one of the other Twos. And I thought one of my fellow Threes was a top contender for the One spot I sort of expected.

This same trauma is occurring for just about half the officers in the entire United States Air Force. Like me, most of them will be doing great if they can guess even half the winners in their peer groups.

Faced with this newly delegated power, the raters—particularly the reviewers—probably won't ever be able to totally articulate their reasons for making the rankings they do. At first I thought that certain career fields had an edge, but I learned that was wrong. Then I thought that being in a so-called soft-core support field was a handicap, but that was wrong, too.

Can it be that how each officer fares depends essentially on how well his rater and reviewer *like* him? It could be, if you define "like" in a broader context than friendship. It could be the same kind of "like" that determines at the track which horse you put your money on.

It may be a reward for past performance; it may be an inducement for future achievement; it certainly embraces both merit and potential. "Like" depends a lot on how much you know about your horse. It also depends a great deal on what you don't know about him. Ultimately it may simply be that gut intuition that triggers the yes or no decision in time of stress.

So there is little use trying to psych the competition. The problem is within each of us. Mine may be keeping too much of my work to myself. I take the absolute minimum of my rater's and reviewer's time, figuring they can better use their time to help people who need them more than I do. I think in the future I will include them in more things I am doing.

But what do I do now? There's no sense in pretending I didn't consider many alternatives, not all of them mature:

—I'll switch career fields.

—I'll resign.

—I'll transfer to another base or job where I am appreciated.

—I'll relax and show them what a real Three job looks like!

It didn't take long to conclude that those possibilities were stupid. Because the overriding facts are that I like the Air Force and I like my job. I believe the Air Force is vital to the United States, that it has demonstrated good management and genuine concern for its people. Certainly it has given me every opportunity to excel in my profession.

Knowing what I know now and realiz-

ing that I may get only Threes from here out no matter how well I perform, would I again sign up for the blue suit? Yes, I would. And I think after the dust settles, if the promotion system keeps the faith with those of us in the multitude of Threes, then most Threes probably will feel the same way.

True, only a few officers may be Num-

ber One. And the fortunate Twos may try harder. But, remember, Good Things come in Threes. The Ones and Twos also have their problems. Not the least of which is that, if they pause to look back, they just might find a whole bunch of Good Things gaining on them!

*United States Air Force*



I rose by sheer military ability to the rank of Corporal.

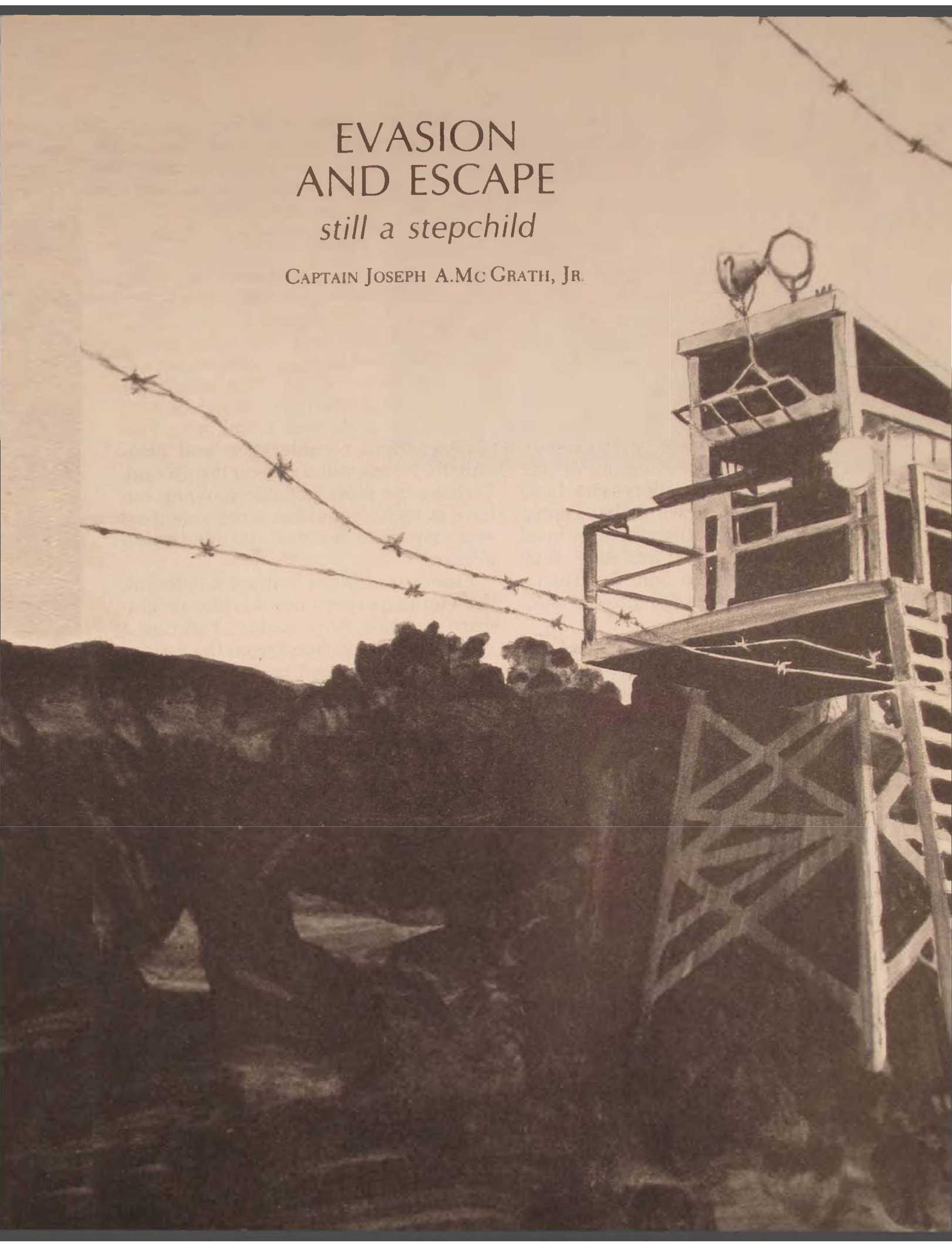
Thornton Wilder



# EVASION AND ESCAPE

*still a stepchild*

CAPTAIN JOSEPH A. MC GRATH, JR.



**D**URING the Vietnam conflict, one aspect of combat operations in which the United States Air Force took pride was that crew members downed in hostile territory would be promptly rescued, even in the face of stiff opposition from an enemy force present in the area. It was often unofficially stated that this assurance improved the morale of the aircrews and led them to press more aggressively against the enemy, but the assumption is easily dismissed. To field a professional air force, one knows, a priori, that targets will be attacked as ordered, with or without the comforting knowledge that rescue will be prompt. History is replete with examples of U.S. airmen, soldiers, and sailors who have faced the enemy knowing that rescue was improbable and that their survival depended on individual initiative. B-29 crews over Japan, the Son Tay rescue force, and submariners fall into this category.

However, the Vietnam war set a dangerous precedent which has had far-reaching effects on the thinking of USAF members flying the line. Because an aggressive recovery policy was believed necessary to maintain morale, and since the air resources were available, a tradition of immediate rescue was established. Such a thought process reached its logical conclusion (to engage in herculean rescue attempts) without examining the logic of the major premise in the light of military reality. That is, should other lives and millions of dollars of equipment be endangered to return one or two men?

Once the pattern had been set, it became ingrained in the thinking of flying personnel that, under most conditions, rescue would be imminent if they could just maintain radio contact. In fact, crews discarded other pieces of survival

equipment to make room for extra batteries and radios. This type of thinking can have insidious long-term effects. If rescue is not forthcoming, the airman is physically and psychologically unprepared for long-term evasion.

Unfortunately, the Vietnam syndrome has persisted into the present era. It is difficult to teach principles of evasion and survival techniques to individuals who categorize their fate after shoot-down into the following: immediate rescue, capture, or death. The belief that the helicopter will arrive like a *deus ex machina* in a classical Greek play precludes serious consideration and planning for an extended stay on the ground. Perhaps the most valuable tool one can have in such a condition is not a compass or a map but a positive attitude toward evasion.<sup>1</sup>

From a traditional military standpoint, the Vietnam experience was like a nightmare vacation from reality. Fighting a minor power and freed from the normal military requirement to defeat the enemy quickly on the battlefield, we had a vast array of hardware, aircraft, and technology available and no serious enemy offensive threat to force stringent husbandry of resources. It was this set of circumstances that could allow, for example, the loss of five aircraft in an attempt to save one crew.

In any future major conflict we may not have the same favorable air environment as existed over North Vietnam. We may be faced with the wide spectrum of anti-aircraft artillery (AAA) that proved itself in the hands of the North Vietnamese: the whole family of Soviet-developed surface-to-air missiles (SAM), plus an advanced series of fighter aircraft with improved radar and air-to-air missiles. This combination could result in greater combat losses than were



### **Successful Rescue Mission**

*An Air Force pilot (right), his A-1E Skyraider having been forced down over North Vietnam, talks with his rescuers after their safe return to South Vietnam.*



experienced in Southeast Asia and even more downed aircraft should search and rescue (SAR) forces be committed.

It is beyond the scope of this article to postulate the specific location where armed conflict may ensue, or what enemies we may face, or what the counterair threat may be. The purpose is to examine what search and rescue/evasion and escape (SAR/E&E) concepts are in vogue and contrast them with real life situations. Looking first at helicopter extraction, we find that the success ratio of SAR helicopters and their support aircraft remains unknown when pitted against an enemy equipped with modern air defense weapons. Again, we must not fall victim to the tunnel vision of Vietnam. Although successful rescues were made in the midst of AAA, SAM's, and the MIG threat, there were several mitigating fac-

tors. SAM opposition consisted primarily of the SA-2, which is the least modern of the family of Soviet SAM's, and its altitude restrictions worked in our favor. As for the hostile interceptors, the North Vietnamese chose to conserve their resources and were heavily outgunned and outnumbered in most situations. We may not always be so fortunate in our opponents. Someday we may have to engage an enemy more prone to commit his air force, so it is doubtful that resources will be available for rescue missions when air superiority is an issue and tactical targets remain to be struck.

In any limited or general war with a nation on the receiving end of Soviet technology, there may be a vigorous confrontation for control of the air. Consequently, the number of aircraft downed could be quite high. It may be possible in





### **Rescue—Practice and Real**

*A typical parachute-survival training exercise (above) conducted at Brooks AFB, Texas, in preparation for a flying tour in Southeast Asia (SEA) . . . . An F-4C Phantom pilot (left) is hoisted from the ground on a jungle penetrator by the crew of an HH-3E Jolly Green Giant helicopter.*



some circumstances to effect a rescue with the use of low-flying helicopters, but with numerous crew members spread over a wide battle area the saturation point for helicopter resources would soon be reached. This buttresses the necessity that crews be prepared mentally and physically to evade capture, survive, and move considerable distances to await rescue. This is an old concept in the USAF but one that requires renewed, official emphasis.

At the other end of the recovery spectrum is the time-honored evasion net. This phenomenon appeared during World War II in the occupied countries of Europe and to some extent in China. The basic evasion net scenario is as follows: the evader makes his way to a prescribed location, where he is picked up and identified by an indigenous member of the net; and then he is moved clandestinely to a point where extraction by friendly forces can take place.<sup>2</sup> Each year this false god is slavishly worshipped during field training exercises (FTX). What worked in World War II to return over 4000 allied soldiers and airmen from Nazi Europe was the result of a set of fortunate circumstances that may or may not be reproduced in some future conflict.<sup>3</sup> At best the evasion nets in France, Belgium, and Italy were manifestations of the humanitarian instinct of numerous groups and individuals, maturing over a long period of time and producing the most spectacular results during the rout of the German army. Even in the best of times the nets were constantly beset with informers and lax security practices.<sup>4</sup>

We may postulate certain initial assumptions based on the fact that evasion nets are manned by the native population. First, in a nation where measures to control the populace have been in effect

for some time, the chance of cooperation is slim indeed. There is little hope of constructing a net before the conflict begins, and, afterward, the threat of retaliation against one's family by the security forces may deter all but the most stout-hearted.<sup>5</sup> Security regulations would be tightened and informer nets increased during war time.<sup>6</sup> In addition, cooperation by a controlled population would be contingent upon evidence of victory by the United States government and its allies.<sup>7</sup> In fact, the opposite may be true, for a long period. Also, to be successful, the net members must shed their ordinary attitudes and enter the dangerous and labyrinthian world of the conspirator. Clandestine techniques and sound security practices must quickly be learned and applied. When curfew and other security regulations are strictly enforced, to contact, recruit, and train net members, who may live many miles apart, is a monumental task. Finally, individuals must be found who will risk torture, death, or a combination of both to aid a foreign airman.<sup>8</sup>

In addressing the question of friendly nations overrun by an aggressor, one encounters the same type of problems. Few people want to back a loser. Even the much vaunted but generally overrated French resistance did not get off the ground until the Normandy landing. Many Frenchmen cooperated readily with the German army, their traditional enemy, and captured members of evasion nets were cast into French prisons to be guarded by their own countrymen.<sup>9</sup>

But the gaping hole in the theory behind the evasion net concerns the procedures used to gain entry into the net. Because of security considerations we are forced to assent to the argument that once a crew member is shot down, it must be considered that he has been cap-

tured and has divulged all the information he possesses to his interrogators. In theory, all the procedures known to him are now known to the enemy. A fellow airman who attempts later to use the potentially compromised methods may be initiating a long-lasting relationship with the hostile security service.<sup>10</sup> The final factor, which militates against dependence upon the system, is the time lag. Assuming there is indigenous cooperation, it might be a long time before an evasion apparatus would become operational after the outbreak of hostilities. Meanwhile, the evader must be prepared both mentally and physically for an extended, unaided stay on the ground.

Not only is the evasion and escape net concept out of date, but the method for testing its procedures and simulating circumstances is hopelessly inadequate. Each year field training exercises doggedly stick to the same tired E&E format. No matter how the scenarios are juggled, they are still variations on a theme. And in addition to these complaints, the evasion nets are, with few exceptions, operated in an FTX atmosphere devoid of a counterintelligence opposition. What is put into practice are the mechanics of a theory over thirty years old and as yet unsuccessful outside of the unique environment that spawned it. However, since I have been so critical of this technique, I hasten to add that the clandestine and complicated nature of the E&E net demands that some individuals retain the capability to activate it, should the necessity arise. This means that the E&E technique must share some part in exercise play but certainly not the dominant one it now holds.

Another alternative to long-term evasion that must be mentioned is the use of personnel recovery teams, usually U.S.

Army elements, to locate and escort evaders to safety. This technique may be viable when a downed wing commander is the target, but to apply it across the board is unworkable, just considering the sheer numbers involved. Aircrew recovery is not the primary mission of such forces, and substantial numbers cannot be committed to this effort when tasks of higher priority remain unaccomplished.

THUS far, only negative concepts have been presented. The purpose of this article is not just to criticize but to propose re-evaluation of SAR/E&E concepts regarding limited and general war.

With the realization that airmen must be prepared to survive for a long period in a hostile environment, one obvious conclusion is to expand the survival training presented to the crews. At the USAF Survival School this would mean more time in the field than is spent in the classroom; it also means increasing demands on the students in the field portion, especially in the area of plant food identification and collection. For example, students could be tested and required to identify certain survival foods in order to graduate.

Another critical factor is the level of self-confidence a man possesses when faced with an extended period in a hostile area. This is something that cannot be taught but must be acquired and then reinforced. If during survival training the individual is exposed to a solitary environment where he can depend only on himself, then an actual survival experience should have a less traumatic effect. The current use of the "buddy system" may conform to accepted safety procedures, but it fosters a false sense of security during training and precludes a sense



of realism from taking hold of the trainee. The intended product of the training is an individual who has the physical and mental preparation to survive and return to friendly control. To achieve this, the theoretical evasion situation should closely approximate actual circumstances. At the very least the crew member should be allowed to come to grips with isolation and fear of the unknown in a training environment, as achieved by solitude in a wilderness area. This technique is not the safest way to get to know oneself, and of course there may be injuries or perhaps even fatalities. But such training can increase the number of people who successfully evade capture and return to friendly territory. And from the USAF viewpoint this is the intent of the E&E program—to get valuable resources back in the cockpit.

The entire program may be approached in monetary terms. If the re-

turn rate from hostile areas can be increased by improved and realistic training, then that very training, which might cost the Air Force the use of several pilots from injuries, is actually responsible for a net gain of men and dollars in the long run, since the returning crews do not need expensive replacements.

The final argument against overprotection and undertraining is the attitude expressed by many aircrew members concerning their chances for evasion in North Vietnam if rescue attempts failed. The general attitude of literally hundreds of flying personnel with whom I had contact was thus: if helicopter rescue was not possible, *then capture was a sure thing*. To the serious observer it was clear that their attitude was not “I *might* be captured,” but “I *will* be captured.” This state of mind spread throughout the Air Force because there was no real,



*A crewman encumbered by his inflated life preserver and riding a horse-collar sling is brought safe aboard the helicopter during sea-rescue training prior to service in SEA.*

## Jungle Survival School

*USAF aircrews heading for the Vietnam war attended the Pacific Air Forces Jungle Survival School in the Philippines, to learn how to survive the hostile jungle terrain. . . . A native instructor (right) shows how to cook available foods stuffed into green bamboo tubes. . . . An EC-47 copilot (below) learns to use a night signal flare . . . . A UH-1F pilot (opposite, left) lowers himself from a platform with a 150-foot nylon tape, carried by aircrews in case they paradrop into high trees. . . . A rescue controller officer (far right) is "rescued" by being reeled into a hovering helicopter.*







positive attitude, reinforced by training, that led men to believe they could be successful evaders.

Once an individual is trained, his skills should be re honed and reinforced by additional exposure to field conditions. Those aircrews that will be exposed to the greatest threat should receive the bulk of the training. This could be pro-

vided during the numerous field training exercises held each year under conditions that range from arctic to desert. In fact, the exercises could answer the basic question of whether present training is adequate. To do this, certain men would be selected at random and immediately projected into a survival situation during an exercise. This training of course has

already been provided, but I propose one further refinement—the men are to stay in the field for two weeks, alone, and with only the standard survival equipment, including an emergency radio. Past exercises have always avoided the central issue. Can crews survive using just skills learned at Survival School? On one exercise the evaders were provided with “C” rations; another allowed the men only several hours alone before they were taken in by the evasion net. We need to test the results of survival training in a controlled atmosphere that approaches the real thing. The FTX could be such a vehicle, if we would so use it.

If tests show that follow-on training is necessary, then the E&E portion of the exercise could be changed to include an increased number of aircrews. The scenario would be expanded, and a significant number of evaders would be put into operational areas with instructions to make their way to a predetermined point through significant troop concentrations. The combination of terrain, weather, and ground troops, plus the possible cooperation of local police as a hostile force, would form an inexpensive, realistic training ground. In present exercises, relatively few aircrewmen are used, and their survival and evasion skills are not heavily taxed.

In any long-range, unassisted evasion program, the evaders will need addition-

al survival gear, clothing, and perhaps dehydrated emergency rations for extremely hostile climatic conditions, such as severe winter weather. However, this is not the forum for presenting a detailed account of the means which would be used to resupply evaders. There are ways of making such a system work.

ALL of the techniques for recovery discussed throughout this article have their place if employed under the proper circumstances. However, circumstances and capabilities change, and our response must also undergo a metamorphosis. The helicopter rescue, the evasion net, and recovery teams may again have their day; hence, we must devote some effort to keeping up the skill banks in these areas. Not to do so would be plainly unwise.

But the current situation dictates that more emphasis be placed on the individual's personal effort, and this is where the USAF must expend its effort if it wants its people back. Aircrews are a most valuable asset and not easily duplicated. To assure that they are available for return to combat in times of dire need, a major effort should be expended to increase their repertoire of survival skills, foster a positive mental attitude, and present them with a realistic evasion training program.

*USAF Special Operations School*

#### Notes

1. Based on personal observation as Search and Rescue/Evasion and Escape Briefing Officer over a cumulative period of four years between 1968 and 1973.

2. Airey Neave, *Escape Room* (New York: Doubleday, 1970), p. 207.

3. *Ibid.*, p. viii.

4. Vincent Brome, *The Way Back* (New York: W. W. Norton, 1958), p. 162.

5. John Bradley, *Lidice* (New York: Ballantine Books, 1972), p. 159.

6. J. C. Masterman, *The Double-Cross System in the War of 1939–45* (New Haven, Connecticut: Yale University Press, 1972), p. 188.

7. *Airpower and Russian Partisan Warfare*, USAF Historical Study No. 177 (Maxwell Air Force Base, Alabama: Air University, 1962), p. xi.

8. Special Operations Research Office, *Human Factors Considerations of Undergrounds in Insurgencies* (Washington, D.C., American University, 1965), p. 112.

9. Neave, p. 108.

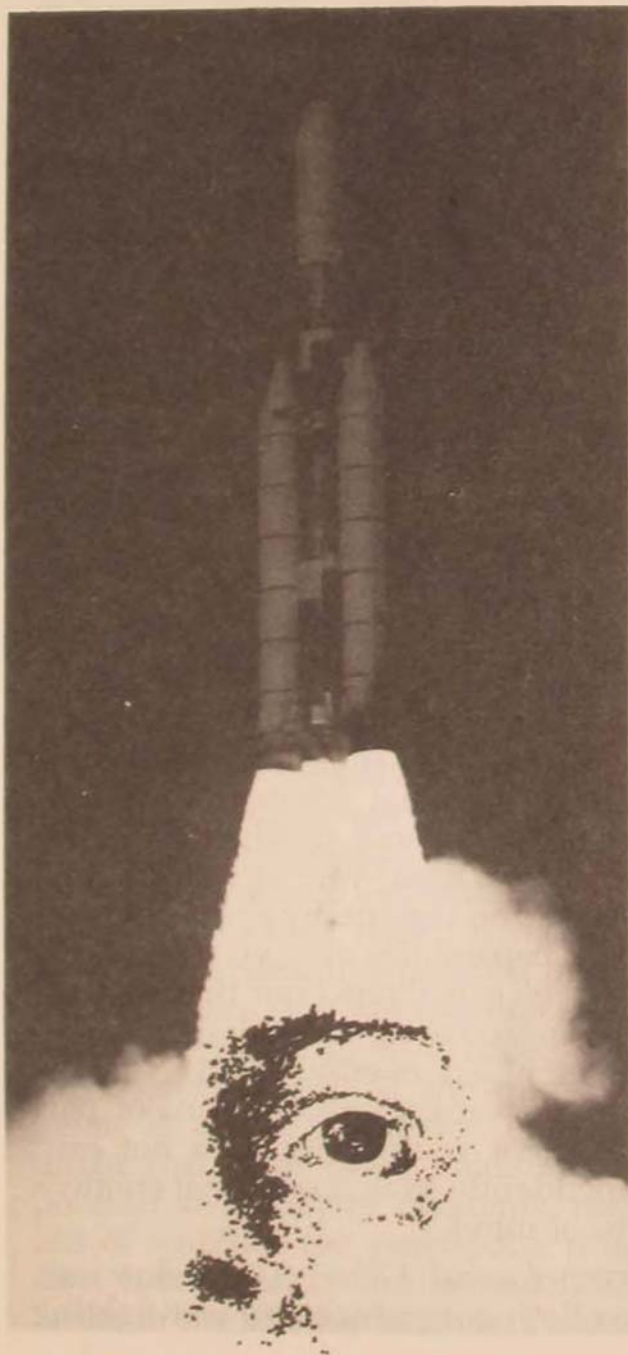
10. *Ibid.*, p. 207.



# OPERATIONS RESEARCH SHALL INHERIT THE EARTH

MAJOR ROBERT W. CHANDLER

**R** in  
my  
opinion



**T**HE primary utility of nuclear weapons lies in their nonuse. Recognition of this seeming paradox has been a cornerstone of our long-standing national strategy of deterrence. According to AFM 1-1, *United States Air Force Basic Doctrine*, deterrence is

a state of mind brought about by the existence of a credible threat of unacceptable counteraction to an enemy's hostile actions. The intent is to deter an adversary—to prevent an act by fear of the consequences—or to impel him to take some action acceptable to the United States. . . . Deterrence depends upon a potential enemy's perceptions, attitudes, and judgments concerning the power that can be applied against him. He must be convinced that power exists, that it can be effective, and that there is the will to use it against him.

The essence of this definition is found in the explicit recognition that deterrence is psychological—"a state of mind." Nonetheless, we often overlook this essential ingredient and focus our attention on hardware and forces that will support its inhibitive intent—"that power exists, that it can be effective." Generally, Air Force analyses of deterrence effectiveness tend to revolve around models, war-gaming, numbers, and the like. While wrapped around this quantitative axle, the qualitative psychological and political aspects of deter-

rence quite often are ignored or relegated to secondary importance. The result is that much of our future force analysis is focused solely on war-fighting capabilities. This important ingredient is presupposed somehow magically to produce the desired psychological and political effect, but it does not always work this way.

Realistic analysis of deterrence requires both qualitative and quantitative assessment, moving back and forth from one to the other. Neither is *most* important. They work together and are mutually supportive. Most operations researchers would agree with this fundamental proposition. But too many force structure analysts today pay lip service to the qualitative measures and trundle down the "number-crunching" yellow brick road like the Foolish Scarecrow, Cowardly Lion, and Tin Woodman on their way to the Land of Oz, shouting to the qualitative Munchkin\* "word merchant" over their shoulder to the effect: "Operations research shall inherit the earth!"

To be sure, the "state of mind" psychological and political gray area and "that power exists, that it can be effective" black-and-white, computer-quantifiable area are sometimes unwilling bedfellows in a single analytical world. The problem is that the psychological ingredient of deterrence is elusive. It is subjective, difficult of definition, and based on inference. Precise, unassailable answers that will satisfy all audiences are impossible. We just do not have analytical tools that will give us results based on the hard facts and empirical evidence that are so familiar to, and comfortable for, those who are used to living with numbers and hardware.

\*As any seven-year-old can tell you, the Munchkins are the oddly dressed little people of Munchkin Land, the area from which Dorothy started her trek along the yellow brick road to the Land of Oz.

Three qualitative yardsticks or values do offer a helpful framework to use in judging psychological and political effectiveness, but they cannot stand alone. Rather, they must be used in conjunction with quantitative analyses to draw support, reveal trends, and force relationships not otherwise apparent, and provide insights upon which a true picture of world strategic balances and power relationships can be based.

*Deterrence Value.* A prerequisite to effective deterrence is sufficient forces for an assured second-strike retaliatory capability. War-gaming models playing one force against another can produce invaluable insight on which to base an assessment of the physical state of deterrence. But these results are not the proof of the pudding because deterrence is a peacetime objective—a psychological determinant that works on the potential enemy's intentions. It is based on perceived power or the effect on reducing the likelihood of enemy attack. Qualitative judgments beyond cold numbers are thus required.

*War-fighting Value.* For deterrence to be effectively perceived in the minds of adversaries, sufficient forces must exist and be seen as capable of being effective against a potential enemy. This value supports the overall psychological concern, but it is a war-waging determinant that works on the enemy's perception of his own capabilities vis-à-vis our own. It is based on actual power or the potential effect on reducing the adverse consequences of an enemy attack. Clearly, computer war-gaming has a major part to play, but warfighting does not exist independently from a potential enemy's "state of mind."

*Psychological Value.* This value cuts across both deterrence and war-fighting



considerations, tying them together. In peacetime it is a *sine qua non* for deterrence. Both perceived and actual power determinants have a part to play because they have a synergistic effect which is crucial in demonstrating national resolve and real capabilities to friends, foes, and ourselves. In wartime these determinants continue to be relevant; they work together on the enemy's "risk calculus" in his decision either to continue the conflict or negotiate.

"Beauty is altogether in the eye of the beholder"—so is perceived power. Reality often is distorted by our preconceived images. These prisms consist of our values, past experience, and wishes. They are a set of refractive lenses through which we see the world. In terms of perceived power, the quantity and quality of existing weapons and those in the research and development stage play an important role. But these "real" inputs to our images are partially mitigated by psychological factors such as the perceived state of the economy, defense budget trends, national will to protect vital interests, extent of consensus behind national leadership, social cohesiveness, state of readiness and morale of the armed forces, and dynamism of national purpose. These cognitive factors inescapably qualify and warp perceptions of the physical deterrence value represented by existing and potential forces. Although distorted, these psychological perceptions constitute political reality to the beholder. They are the stuff that deterrence is made up of—a state of mind.

Perceived power is the crucial element. It is the perception of physical might that most often influences both political and military decisions, regardless of whether the perception is accurate. It is certainly the critical political factor in the nuclear balance. Perceived

power, which is always relative, will determine which side will "blink" first in a crisis confrontation. It will also influence both U.S. and Soviet propensities for risk-taking and sway third parties in their support of one side or the other.

The most difficult problem of assessing perceived power is, strangely enough, one of developing a sense of empathy for an understanding of an adversary's point of view. We cannot stand in Soviet shoes and gaze upon our own deterrence force structure through their Marxist-Leninist prisms. We are prisoners of our own past, values, and desires. A striking example of this problem is the difficulty that many Americans have had in grasping that the Russian view of *détente* has been entirely different from our own. Probably the best we can do is view our strategic nuclear forces in real terms and infer what is the likely Soviet outlook. This is admittedly a chancy approach. We have few cold facts to justify "our view of their view" of our forces. But we can explicitly state our assumptions and make some intellectually tough gut judgments. The imperative of adequately assessing deterrence and the contribution of our strategic forces dictate that we at least try to infer perceived power as it might logically (or *illogically* by our values) exist in our adversaries' eyes. Simple wargaming of "real" force factors with the assumption that it reflects the state of deterrence is not enough.

Indeed, the very preciseness of numbers may overlook important clues that could influence perceptions of deterrence. Operations researchers, for example, might find through computer wargames that the nuclear balance is in rough parity, although one side has a clear superiority in numbers of missiles. A case can be made that the advantages of one side are offset by bombers and

qualitative advantages in missile weaponry (e.g., better warhead accuracy and yield-to-weight ratios). However, bombers, compared to missiles, operate at a snail's pace, and qualitative warhead advantages may be hidden from view in stacks of classified documents. Do the Soviets see these qualitative advantages in the same way that we do? How confident are they that their extensive defense network can handle U.S. bombers? Does this quantified view adequately reflect the *perceived* state of deterrence? Indeed, does the Kremlin view deterrence solely in terms of quickly responding missiles? What about third parties? How do they compare the new huge and numerically superior Soviet missiles with our relatively small Minuteman? What is our own view? How do numbers count in deterrence?

It is to be hoped that the chorus to this brief litany is simply that quantitative analyses of war-fighting capabilities tell us virtually nothing about their deterrence value until they are subjectively evaluated in terms of perceived power. Such judgments of a potential enemy's state of mind are problematical, and little empirical evidence is available. But it is far better to have less precise answers to the right questions than not to ask the questions at all because of their non-quantifiable nature.

It is not so much the operations research folks who are falling short of the mark; those worth their salt have a healthy skepticism of the supposed empiricism of their "number crunching" and realize that quantitative analysis is a tool, an instrument for use by managers in making decisions (i.e., in exercising "judgment"). More often one finds that it is the intermediate-level consumer of the operations research product that ascribes too much certainty to quantified

results and fails to use the insight offered in making hard-to-reach gut judgments of the psychological and political state of deterrence. By accepting numbers as representative of reality, one is able to abdicate responsibility for assessment of deterrence viability to the machinations of operations research, avoid the tough questions of what might be the more likely Soviet perceptions, and project a supposed acumen to the "true" state of deterrence. In sum, the "right" questions that might help to interpret the quantified evaluations of war-fighting capabilities in terms of perceived power are not asked.

This intellectual flabbiness appears to spawn from a combination of unawareness and complacency—a lack of perception of the Soviet "state of mind" and the relationship between qualitative and quantitative analyses and a certain smugness with the certitude of numbers. Despite the pervasiveness of these weaknesses, education and individual research in four primary areas hold out a potential for strengthening our knowledge of deterrence and appropriate analytical techniques: (1) *The Soviet Mind*: A psychological profile of Soviet man and expert assessments of how our deterrence posture is likely to be perceived; (2) *Deterrence Strategy*: A greater depth of insight to the psychological and political aspects of deterrence and how they interact with war-fighting capabilities; (3) *Perceived Power*: A broad understanding of the dynamics of images and reality in deterrence and the political nonuse of nuclear weapons; and (4) *Qualitative-Quantitative Analysis*: A keen appreciation of the interrelationship between qualitative and quantitative analyses in reaching the judgments necessary for evaluating deterrence effectiveness.



A GOOD starting point would be a review of the curricula of professional military education courses offered by Air University to ensure that all essential aspects of the four outlined topical areas are treated adequately. Special attention should be given to the role of images and reality in deterrence and the nature of the qualitative and quantitative analysis, for it is in these concerns that we appear to be coming up short most often. Both officially sponsored and individual research by students at Air University could also add a significant measure of insight in all four areas. "The Soviet mind" should be handled gingerly. Here an in-depth knowledge and appreciation of Soviet history, ideology, cultural predispositions, attitudes, and values would be required to avoid impressionistic results; it would be best to leave such assessments to the experts.

A second method of attacking complacency in our analyses is through practical application. Those of us on the front line of today's analytical world should stop for a second and try to take stock of our efforts to determine whether we are too busy doing things wrong to take the time to learn how to do them right. Operations researchers, for example, should

make it clear to the consumers of their product that their "number crunching" has provided a tool, not a panacea for decision-making. Working together with their "word merchant" partners, "number crunchers" should also assist and encourage decision-makers to draw inferences and make judgments of the state of deterrence that go beyond cold numbers.

Education, research, and practical application in the four fundamental areas already discussed should ensure us a sufficient measure of success in correcting some mistaken notions of how to evaluate deterrence effectiveness through operations research. Fortified by such knowledge, we will be able to leave the bedazzling Land of Oz with the unflagging courage of the Lion, the new heart of the Tin Woodman, and the superior intellect of the Scarecrow and enter the mundane world of reality. Here the wizardry of "number crunchers" and the profundity of "word merchants" will work hand-in-hand, producing better analyses of our important deterrence strategy. Our enchanted forest is one of computers and words, combining the war-fighting and psychological values of deterrence as partners in a single analysis.

*Offutt Air Force Base, Nebraska*

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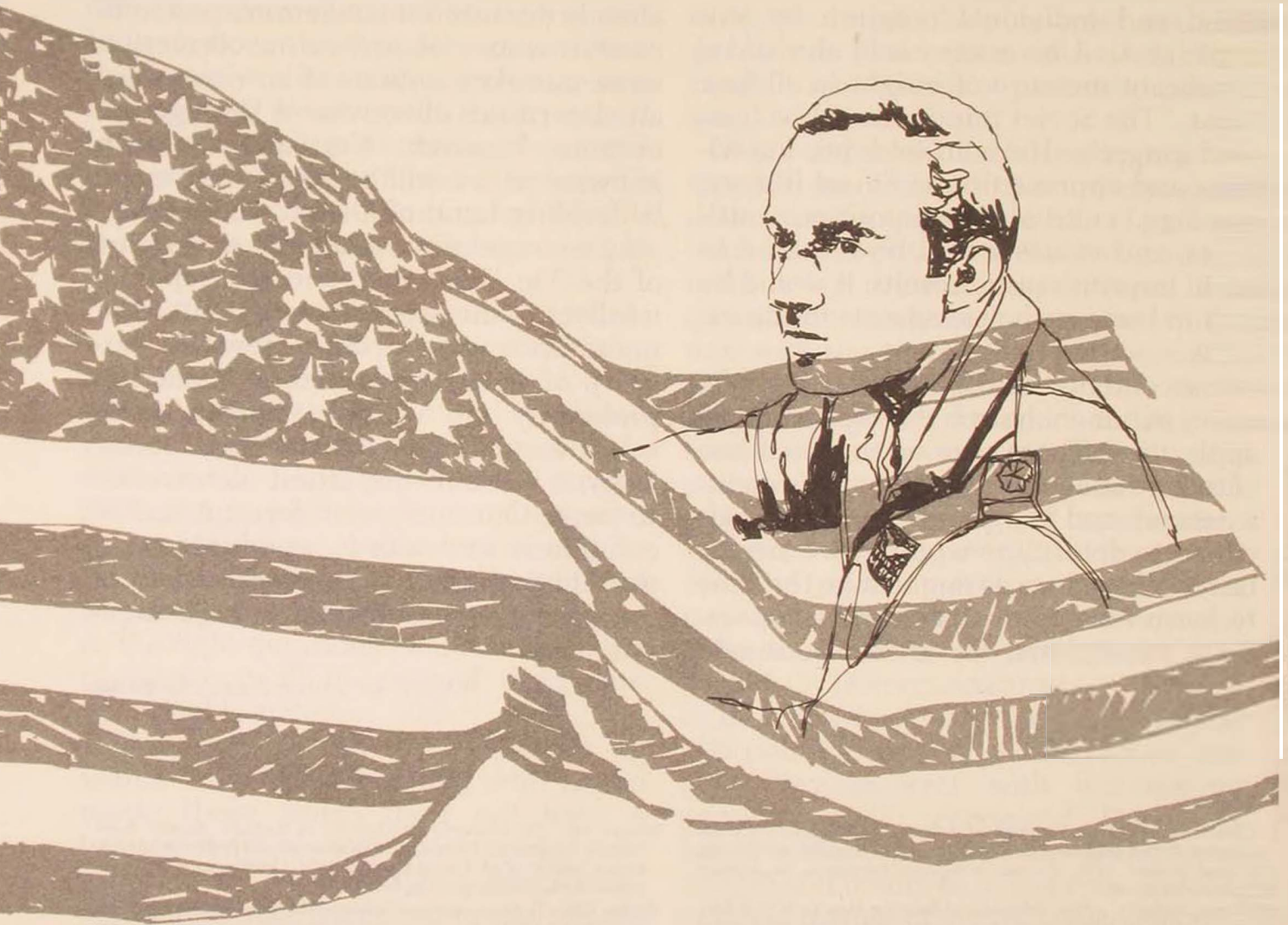
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# ON FOSTERING INTEGRITY

MAJOR WILLIAM E. GERNERT III



*But they grow like savages—as soldiers will,  
That nothing do but meditate on blood—*

Shakespeare— *Henry V* Act V, Scene II



TODAY'S Air Force officer is unlikely to measure up to Shakespeare's description. He not only has much to do, but when time does allow for reflection, there is much to meditate on besides blood. When the military officer does think about himself and his profession, his thoughts are probably far from blood, yet still close to the concept of the professional soldier. These thoughts are more likely to focus on or around one issue: Integrity.

Of all the charges and criticisms levied on the officer corps in the last decade, the most indelible and perplexing have been in the area of integrity. Lapses in judgment are accepted, if not expected, in endeavors as large and complex as ours. No one remembers the names of those who bombed the Russian ship in Hai-phong harbor or those who procured the short-lived B-58. Even atrocities like My Lai are remembered as aberrations, and few critics, either external or internal, seriously suggest that Lieutenant William Calley's sins are shared by us all. Unfortunately the names that are remembered, that somehow fail to disappear into the broad sweep of history, are those whose lack of integrity imply that the "honor" in "Duty, Honor, Country" may be crumbling. America and its military would decry any notion that the officer corps views itself in terms of its aristocratic heritage, but will not accept any falling away from the concept of honor which springs from that heritage.

Within the Air Force, however painful it may be to admit, worries about integrity are merited. Each of us has his own personal happy-hour story of integrity challenged or integrity compromised. Our general officers, when speaking of leadership, or what they look for in subordinates, or how to succeed in the Air Force, consistently mention integrity

as a prerequisite, with the clear implication that they have encountered a number of officers without integrity. Objective data can be seen in surveys of officers who leave the Air Force. For example, a study of Air Force Academy graduates listed a lack of integrity in the Air Force as the third-ranking reason they left the service.

If, then, we perceive integrity as a problem, how do we foster it? First, we use incantation: the repetitive plea for integrity from senior officers to juniors, from faculty (at professional military education schools, ROTC, Air Force Academy, etc.) to students, from writer to reader. The shortcoming of incantation is twofold; it is transitory in effect and attacks the symptoms rather than the causes of where and why our integrity is slipping.

A more recent effort to foster integrity is the attempt to develop a written code of ethics for Air Force officers. This approach can be seen in three studies by Air War College and Air Command and Staff College students in the last two years, is also addressed in the ACSC curriculum, and has received encouragement from the former Air Force Deputy Chief of Staff for Personnel, Lieutenant General John Roberts. Its allure derives, at least in part, from the behavior of prisoners-of-war (POW's) in Southeast Asia. Their honorable conduct, despite torture, solitary confinement, and imprisonment for as long as 7½ years, is a source of tremendous pride to Air Force officers. When POW's speak of the Code of Conduct and how it sustained them, we listen very carefully. Yet any official code of ethics faces a number of hurdles in the area of applicability: involvement (Air Force officers? all officers? all military?); length (Is "Duty, Honor, Country" too short? Is three pages too long?); and

method of implementation (by vote? by the Joint Chiefs of Staff? by Congress?).

While a written code of ethics has its sincere advocates, it ignores the most fruitful avenue of attack for fostering integrity. Those who say the solution is a written code of ethics make the implicit assumption that the problem is lack of such a code. That assumption throws into deeper darkness the problem of what other factors within the Air Force erode integrity and what changes might be made to reduce or eliminate these factors. That these factors are not spotlighted should not be a surprise. After all, since integrity is an initial and implicit assumption in all that we do, why would anyone assess policy or procedures as to their effect on integrity? Since integrity is incumbent upon each of us, why should anyone question that there is neither an integrity office of primary responsibility at any level of command nor any guidance anywhere on when and how to rely on integrity?

I hold that the greatest danger to integrity in the Air Force is not lack of sufficient exhortation to have integrity or lack of a written code against which we may measure our acts. Instead, I suggest that the danger springs from our collective failure to stop the erosion of integrity caused by official Air Force management systems and procedures. This is admittedly a strong and rather unpalatable statement, yet it rests on and is directly derivable from two postulates that I submit are amply sustainable. The first postulate is that little lies build big ones (or at least prepare a path for them). It is a bedrock assumption for most of us in our roles as parents, educators, or individuals and should be equally applicable in our roles as Air Force officers. If an individual can be coerced or manipulated into small lapses of integrity, he must

somehow consciously or subconsciously rationalize these acts. It is no accident that both integrity and integer are derived from the same Latin root and refer to a state of wholeness, something undivided. The individual who readjusts his concept and practice of integrity to allow and explain small lies is prone to readjust again or to so redefine his integrity that a large lie can slip by unrecognized or unchallenged.

The second postulate is more difficult to accept. It is that there are portions of Air Force policy and management procedures that encourage if not demand lapses in integrity. More specifically, they strike at the core of integrity and breed false official statements. (If this is too harsh, substitute "pencil whipping" for "false official statements.") Some of you accept this as self-evident. Those who do not are asked to accept it for the moment and evaluate it in the light of examples mentioned later in the article.

One benefit in explicitly recognizing the problem of internal erosion of integrity is a widening of the circle of those who must concern themselves with integrity. No longer do the exhorters and drafters of codes of ethics stand alone. Now all of those who design, implement, or manage policies and procedures have a piece of the action in fostering integrity. In addition, each officer has the opportunity if not the obligation to point out to his superiors those systems that erode integrity.

To provide these new "players" with a basis for action (and buttress the contention that they must act), I propose a five-question test to determine which Air Force policies and procedures are likely to erode integrity. These questions are to a large extent overlapping, but a "yes" answer to any of them indicates a potential problem.



1. *Does the policy or procedure attempt to measure a complex reality by using oversimplified criteria?*

For an example of oversimplified criteria, look at the Air Force weight-control program. This program seeks to eliminate "fat" blue-suiters. Yet it measures "fatness" by a weight/height/age table derived from life insurance policyholder statistics. As a result some individuals who are not fat by the table (because of greater age or smaller bones) look terrible in uniform by any subjective measure. Conversely, some who are fat according to the table are actually in superb physical condition and present an outstanding appearance in uniform. The existence of the table makes it difficult for commanders to lower the boom on those who are fat subjectively but don't fit the table. Since commanders must also deal with individuals who are "fat" according to the table but do not look fat, they are caught on both sides. Add to this the fact that subordinates perceive the gap between the criteria and reality and see the weight-control program as inequitable and unfair, which further increases the pressure. Yet we manage the program at the lowest level by written entries and signatures on training forms and then ensure emphasis and control by written reports up through the chain of command. The result is predictable: a tapestry woven of small lies, as commanders and training personnel "pencil whip" the problem.

Another example of oversimplified criteria can be found in the Air Force's approach to drug abuse. The Air Force does not want to enlist or commission drug abusers but is sophisticated enough to recognize that marijuana use is so prevalent among teenagers that we will inevitably take some entrants who have tried marijuana. We simplify the prob-

lem by dividing applicants into marijuana users and marijuana experimenters; then we further simplify it by defining an experimenter as one who has had four or fewer experiences, a user as one having five or more experiences. We require each applicant to write out the extent of his prior drug abuse and sign it, swearing that what he has written is true; this formula gives us a rapid and legal way to discharge him if he later turns out to have a worse history of drug abuse than he admitted to. The result is again predictable. Applicants who experimented with marijuana, or tried it solely due to peer pressure seven or ten times, are certain that they should be categorized as experimenters. Yet this simplified criterion forces them either to lie, in writing, about their past or virtually eliminates any opportunity to enter the Air Force. It would be folly to believe that some do not give in to the pressure and begin their Air Force careers with a written lie.

2. *Does the policy or procedure ignore or contradict known reality?*

This is not so rare as it might seem. One example was the old officer effectiveness report (OER) system, where the rating official knew that over ninety percent of officers were receiving an "absolutely superior" (9) rating. If he was honest in rating his subordinates and filled in the blocks that corresponded to the correct word picture, then most of them would fall under "effective and competent." Yet in doing so, he would be rating his subordinates so far below their peers as virtually to deny them any further promotions. In short, the real implications of the OER forced rating officials to sign false official statements and give inflated ratings of their subordinates.

Another instance can be seen in the

policy that no entrants to undergraduate pilot training have ever experimented with marijuana, a policy implemented by having each applicant complete a written and signed history of his drug abuse. We know that UPT entrants are recent college graduates, and the pollsters tell us that about fifty percent of college students have tried marijuana at least once. Can we really believe that our written statement has screened out those who tried marijuana twice at age fifteen or once at age nineteen? Isn't it likely that for some we have added the requirement for one written lie to the other UPT requirements?

3. *Does the policy or procedure demand or receive a one hundred percent success rate?*

Anything we bother to measure in the Air Force should have some variation. If we measure it routinely or regularly, then we should be measuring at a level high enough to encounter that variation. Otherwise we are wasting precious Air Force and taxpayer assets in a fruitless task. Yet we still encounter areas where one hundred percent or very close to it is expected or accepted as a result. Where this occurs, either we should strengthen the test or look for signs that someone, either the test-taker or the test scorer, is lying. If NORS rates are 0, or the stan/eval pass-rate is one hundred percent, or every airman gets his five-level in OJT, it should be a source of concern rather than pride. Someone, somewhere, is probably lying. Then there is the question of random or inadvertent error. If crews must answer every question correctly on an emergency war procedures test before they go on alert, then we can bet that a small percentage will mismark an answer or misread a question from time to time. If they do not, then we have probably pressured someone,

whether crews, scorers, or commanders, into a lie.

4. *Are the consequences of failure wholly inappropriate to the nature of the failure?*

This may occur in the formula: If you \_\_\_\_\_ (fail one question on the test/don't buckle your seatbelt/etc.) then you \_\_\_\_\_ (and your supervisor/commander/etc.) must report to your \_\_\_\_\_ (commander/wing commander/etc.) by \_\_\_\_\_ (sundown/24 hours) to explain why and receive punishment. Regardless of formula, it raises a transgression from the normal run-of-the-mill error to the Air Force equivalent of mortal sin. This excessive zeal gets everyone's attention, but it also puts such pressure on the perpetrator and his commander that avoidance of the consequence (by written lie if necessary) becomes a most desirable course of action.

5. *Does it require an individual's personal certification to items which are too complex or too mundane to expect that he is fully knowledgeable of them?*

This is a favorite ploy for the staff officer, since he can use others' personal responsibility as an assurance that his project will succeed (or an excuse should it fail). The commander is a favorite target, since no staff agency is responsible for keeping things for which the commander is personally responsible at a reasonable level. On the mundane side, commanders are often asked to certify the length, priority, and necessity of AUTOVON/long distance phone calls or the immunization status of those in their command. In this and similar areas, they may only be able to maintain their integrity at the expense of their mission. If a commander is forced to choose between attention to mission at the price of certifying something he is unsure of and inat-



tention to mission in order to investigate a minor matter, the Air Force loses either way. On the complex side, commanders may be asked to certify the exact placement of their personnel in a matrix of computer numbers that makes no earthly sense to them, or the exact position and status of each tail number on the flight line, or the average CEP of each pilot in the wing. Again, there is no reason to believe the commander can or should really be personally observing these things. If mission accomplishment is played off against personal certification, we can expect many, if not most, commanders to opt for mission accomplishment and turn a blind eye to personal certification. And, in the final analysis, we can expect a high level of false official statements.

FAILURE TO PASS these tests does not immediately condemn a management system or an evaluation system. Given the mission of the Air Force and the expense or potential effect of our tools (e.g., an AWACS or a nuclear weapon), there are areas where our management systems must be rigid and uncompromising and rely directly on the written word of a responsible officer. These are instances where it may be imperative to challenge integrity rather than foster it. What is important to the nation, the Air Force, and its officers is that they be clearly the exception and not the rule. If they are submerged in a deluge of other requirements for written certification, if they rely on a bedrock of integrity eroded by too many inconsequential challenges, then we have only ourselves to blame.

*Air Command and Staff College*

Bad will be the day for every man when he becomes absolutely content with the life that he is living, with the thoughts that he is thinking, with the deeds that he is doing, when there is not forever beating at the doors of his soul some great desire to do something larger, which he knows that he was meant and made to do, because he is still, in spite of all, the child of God.

Phillips Brooks

# **R** books and ideas

## A FIREBELL IN THE NIGHT

THE HONORABLE JOHN PATRICK WALSH



IT IS a sad commentary on American democracy that we have been unable to formulate a national energy policy that effectively combines national security, optimum energy utilization, as well as economic, environmental, and social objectives. Approximately three years after the imposition of the Arab oil embargo, we give little indication of awareness of our national vulnerability to supply blockages and price escalation. In the past several years, a variety of factors, including the recession, higher prices, conservation measures, and mild winters, has held the level of energy consumption below pre-embargo levels. However, as the economy has improved and memories have dimmed, energy consumption has increased markedly. With crude oil production about 13 percent below the peak levels of 1970 and natural gas output slipping about 11 percent below 1973 levels, this increased consumption has been reflected in imports which currently exceed six million barrels per day or about 40 percent of the total. The fiat-price increases by the Organization of Petroleum Exporting Countries (OPEC) have been significant elements of the inflation which in recent years has rocked the world. In the United States, for example, the refiner acquisition cost of imported crude petroleum soared from \$4.54 in September 1973 to \$14.66 in October 1975, and there is little likelihood of cost reductions of petroleum in world trade in the short-term future. In fact, higher prices seem probable next year.

In 1976 the cost to the United States of imported petroleum will approximate \$30 billion, compared with about \$3 billion in 1970. The volume and cost of imported oil and natural gas are likely to increase at least until there is a full flow of North Shore Alaskan oil through the



Alaskan pipeline. Even then we will be confronted with severe distribution problems and dwindling output in the lower 48 states. Furthermore, North slope natural gas will not be available before the 1980s, when access to pipelines may be available. In addition to the growing strain on our economy, including our international accounts, the source of these imports is potentially dangerous.

As a result of declining Canadian and Venezuelan production, our imports are increasingly purchased from Middle Eastern and particularly Persian Gulf sources.<sup>1</sup> Since Western Europe and Japan are substantially more dependent on Arab oil sources than we are, the entire industrial world is vulnerable to severe disruption if supplies are blocked by accident or deliberate intent. Furthermore, in the event of war involving the major powers, the task of protecting tanker traffic from the Persian Gulf to Japan, North America, and Europe would be enormous. Some buildup in supplies in the industrial countries has occurred, and International Energy Agency mechanisms exist for sharing the limited available supplies in the event of supply disruptions. These full stocks do not, however, obviate the need for an American strategic oil reserve which does not currently exist.

National security interests and common sense dictate the establishment of rational national-energy policies. In their absence, the American people will continue to live expensively and dangerously. Furthermore, conservation is the only short-term means of curtailing our growing dependence on foreign sources.

Probably because of the complexities and dilemmas involved, the energy issue has hardly surfaced in the current political campaign. In addition, the current profligacy in the use of energy suggests that the American people have only a limited awareness of the seriousness of the problem confronting the nation. To some degree this reflects lingering suspicions of the oil companies and the existence of price controls on some domestically produced oil and on interstate sales of natural gas which obscure the replacement price of these products. The net effect has been to hold average oil prices in the U.S. below world levels, reduce the total revenues of domestic petroleum producers, slow the increase in petroleum product prices to consumers, stimulate consumption, increase petroleum imports, and retard structural adjustment to higher world oil prices. Thus, the short-term benefits in terms of restricting price advances and stimulating economic activity have been at the cost of effectively dealing with the basic energy problem and the underlying national security issue.

Despite the paucity of comment in the political arena, there is a growing number of books and periodical articles on the energy issue. Volumes written by Barry Commoner; Edward Friedland, Paul Seabury, and Aaron Wildavsky; Howard Bucknell; and Lincoln Landis cover wide spectrums of the varied energy aspects.

IN his latest book, Barry Commoner† chooses the role of a polemicist in what he calls “a great na-

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† Barry Commoner, *The Poverty of Power: Energy and the Economic Crisis* (New York: Alfred A. Knopf, 1976, \$8.95), 314 pages.

tional debate" on the interrelationship between the American ecosystem, production, and economic systems. At the heart of our current difficulties, he finds one basic defect, the profit motive. His implied solution "at least in principle . . . is socialism." Throughout, he writes with considerable felicity.

Few would doubt that there have been incongruities and inanities in the American economic system, but it is doubtful that they all rest as neatly at the doorstep of the profit motive as he suggests. Correcting the various weaknesses of our society should not necessitate the wholesale adoption of socialism. Furthermore, existing socialistic models are hardly encouraging, although they all may run railroads better than we do. On the other hand, the depth of the energy problem and the magnitude of the capital requirement probably will require a greater governmental role than in the past. This is particularly true in respect to the more exotic fuels.

While there are substantial reasons to question Commoner's economic formulations, he has provided a highly useful description of the technological basis of the energy problem. He lucidly explores the source, nature, values, and complications of fossil fuels, nuclear power, and solar energy. And he convincingly delineates the varying degrees of energy inefficiency in our production system. It is readily apparent that we bootlessly waste vast amounts of energy. The availability of cheap fuel may be more fundamental to this wastage than the profit-motive or technological inadequacies. He is highly critical of the nuclear

energy program in terms of its thermodynamic efficiency, its by-product dangers, and its ultimate financial costs. He is also dubious of the net values of synthetic fuels derived from coal. In fact, his environmental strictures in respect to nuclear energy, coal, and its derivatives would, if determinant, severely limit energy availabilities. In his fervid advocacy of solar energy, he is far more optimistic about its near-term values on a nationwide basis than most other energy advocates. Similarly, his estimates of oil and natural gas resources in the lower 48 states are substantially greater than those of the federal government. Only time and adequate energy prices will prove who is correct; but if we do not bring additional domestic fossil supplies to the marketplace, we will be confronted with increased dependence on foreign sources. In view of the critical nature of natural energy to our future, a "great national debate" is a democratic requirement. His views merit consideration.

THE books by Friedland et al., Bucknell, and Landis have a common threadline of concern about the assurance of continuing foreign supplies. In a scholarly manner, Lincoln Landis† explores the development of Soviet Middle Eastern and oil policies, including Soviet efforts to penetrate the Middle Eastern oil markets and to stimulate Middle Eastern resentments against the involvement of the industrial countries in their oil industries.

In so doing, he systematically utilizes

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† Lincoln Landis, *Politics and Oil: Moscow in the Middle East* (New York: Dunellen Publishing Company, 1973, \$15.00), 201 pages; idem (Port Washington, N.Y.: Kennikat, 1976, \$12.95), 201 pages.



Soviet documentation. Unfortunately, his study predates the 1973–74 oil embargo. It can be supplemented, however, by referring to the publication of the Center for International Studies of the University of Miami, entitled *The Soviet Union and the October 1973 Middle East War: Implications for Détente*. In combination, they highlight the extent of Soviet interest in the Persian Gulf area and the potential danger of the growing dependence of the industrial countries on oil from there.

BUCKNELL's book † contains comments and conclusions on military strategy that are more controversial than his succinct outline of our energy problems. In respect to the latter, he correctly concludes that we will remain heavily dependent on imported oil from the Persian Gulf for years ahead. He foresees increasing competition between the Soviet Union and the industrial countries for those supplies. This competition, in his view, raises distinct possibilities of military conflict for which the U.S. Navy is deemed to be poorly prepared. To husband our limited naval strength, he advocates the essential abandonment of the Mediterranean and bases west of Guam. Japan must protect its own ocean traffic. On the assumption that the American people are unprepared to finance balanced forces, he advocates a naval buildup at the expense of the Army and tactical air forces. Further-

more, to mitigate the effects of numerical ship shortage, he calls for a rapid transition to nuclear propulsion systems. In my view, his strategic proposals would seriously weaken NATO and the political-economic cohesion of the triad of Western Europe, North America, and Japan, which in turn could increase the chances of major power conflict.

FRIEDLAND, Seabury, and Wildavsky †† view with appropriate concern the worldwide consequences of the energy problem. In essence, they endeavor to "comprehend what is happening, to predict what might happen, and to suggest preventive measures." The result of their efforts is mixed. In the first place, there is a disjointed aspect to the flow of their argumentation, possibly reflecting the multiple authorship. Second, the book is replete with hyperbole. Finally, the oil problem is a grave foreign policy issue, but it is doubtful that it should be encompassed under the title of *The Great Détente Disaster*.

SEPARATELY and collectively, the authors cited have helped to delineate the nature, danger, and complexity of the energy problems confronting us. Their message rings like a firebell in the night, warning that the basic security of the Industrial Triad—Western Europe, North America, and Japan—is increasingly dependent on the unimpeded flow of oil

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† Howard Bucknell III, *Energy Policy and Naval Strategy* (Beverly Hills, California: Sage Publications, 1975, \$3.00 paper), 68 pages.

†† Edward Friedland, Paul Seabury, and Aaron Wildavsky, *The Great Détente Disaster: Oil and the Decline of American Foreign Policy* (New York: Basic Books, Inc., 1975, \$7.95), 210 pages.

from the turbulent Persian Gulf area.

The flow could be impeded or interdicted by the decision of the oil producers, by sabotage, or by direct military action. In the latter sense, we should recognize the potential consequences of the formidable air and sea power of the Soviet Union. The vast military, political, and economic strength of the Free World alliance is far too dependent on this vulnerable source of oil. This is an untenable

situation. The firebell calls to us to put our energy house in order. Will this great democracy listen?

*Air University*

Note

1. According to the Federal Energy Administration, the U.S. at the end of 1975 was receiving 81.5 percent of its total oil imports from OPEC countries with nearly half coming from Arab sources. By mid-1976 these percentages were higher.

Whatever each man can separately do, without trespassing upon others, he has a right to do for himself; and he has a right to a fair portion of all which society, with all its combinations of skill and force, can do in his favor. In this partnership all men have equal rights; but not to equal things.

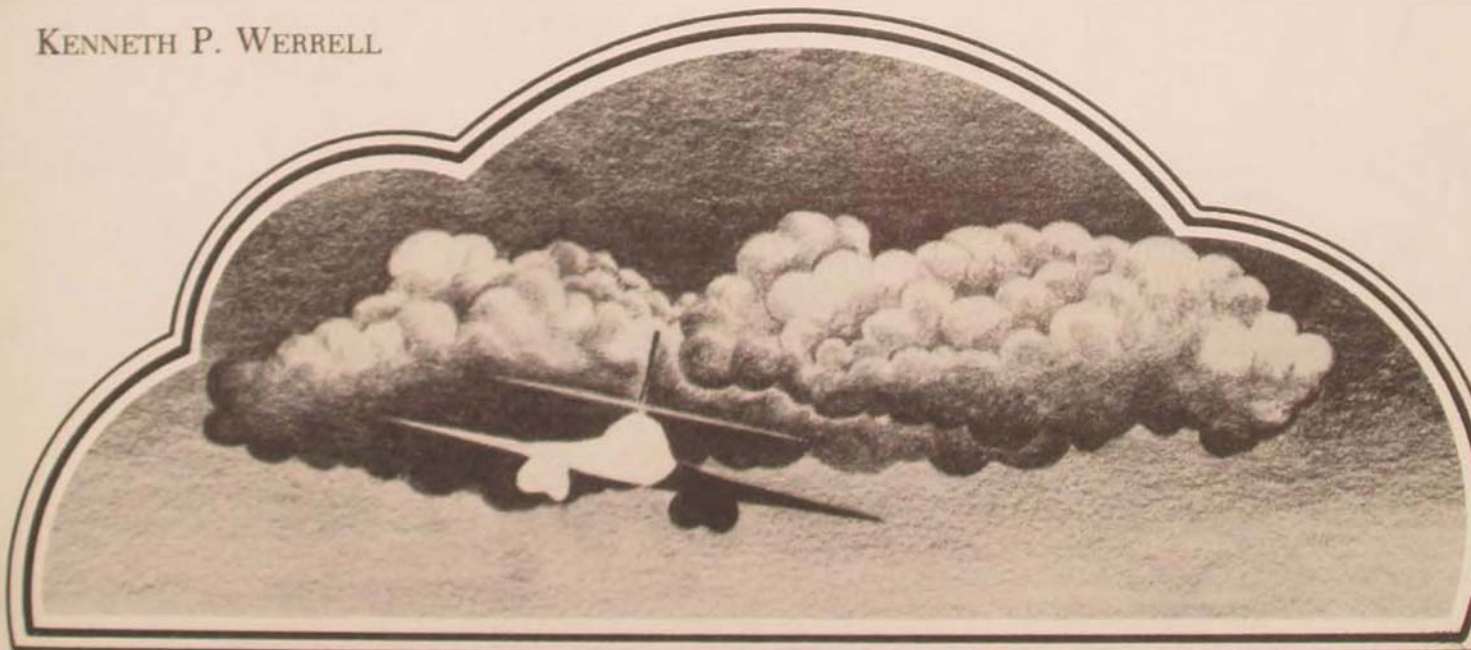
Edmund Burke:  
*Reflections on the  
Revolution in France,*  
1790.



IN THE post-Vietnam era, the U.S. military faces stiff challenges. All services share common difficulties, which certainly must include meeting the problems of the all-volunteer concept, the integration of minority groups and women, the effects of inflation, and the influence of technology. In addition, the Air Force must resolve one issue that is unique to it and has the Air Force much in the news. That issue, of course, is the future of the strategic bomber. Even without growing congressional and public concern with the Soviet threat and the escalating costs of defense, the fate of the strategic bomber is of great importance to the entire country as well as to the future of the Air Force. Three recent books should aid in appraising its future.

## THE AIR FORCE AND THE FUTURE OF THE STRATEGIC BOMBER

KENNETH P. WERRELL



The bomber achieved its greatest success during World War II. Since then much has been said for and against it, but the best studies on the effects of the strategic bombing in the war were produced by the United States Strategic Bombing Survey (USSBS). Recently 30 of the survey's 321 reports have been reprinted,<sup>†</sup> and we are also fortunate to have an excellent study of the survey itself. David MacIsaac's *Strategic Bombing in World War II: A Study of the United*

*States Strategic Bombing Survey*<sup>†</sup> should bolster the credibility of the survey. This fine book tells of the difficulties of organizing the survey, the how and who of personnel selection, and what was studied and how. Throughout, MacIsaac does a good job of weaving the history of the strategic air war into the narrative. Probably the most noteworthy section of the book is "The Great Anderson-Navy War," which says much of interservice rivalry and how myths

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†David MacIsaac, *Strategic Bombing in World War II: A Study of the United States Strategic Bombing Survey* (New York: Garland Publishing Co., 1976, \$12.50), 231 pages.





(specifically that the airmen counterfeited USSBS Pacific Report #71a) are created and perpetuated.

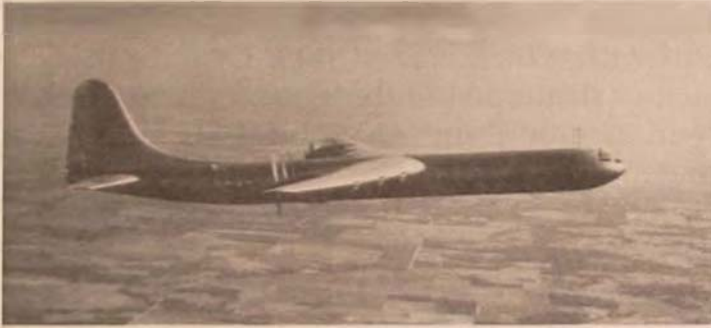
MacIsaac is critical of the survey. He notes, for example, that USSBS was limited by not having among its leadership a labor leader, a ground commander, or, of all manner of men, a historian. The author believes that the survey's leaders relied too heavily on the adversary process. Nevertheless, MacIsaac concludes that the survey performed the appointed task—one that he claims was an impossible job—fairly well, “as well as could be reasonably expected.” (pp. 163, 161)

The author's strengths are his prose

style, his candor, and his research. MacIsaac's writing sparkles and keeps the reader interested even when he is being led through the intricacies of the bureaucracy. His candor helps, for one always knows where the author stands. For example, he writes that the top man was the fifteenth choice for the position, of how a colonel was eased out of the organization, and how the official Army Air Force history is less than straightforward. (p. 189 fn. 12; p. 63; p. 196 fn. 10) Finally, MacIsaac's research is truly deserving of the term “meticulous,” so often used in book reviews and so often undeserved.

Criticisms of the book are principally two in number. First, and the only serious problem, is MacIsaac's failure to assess clearly how accurate the survey was. Did USSBS give history the best assessment there is on bombing, or not? Is it possible to write a better survey of the bombing? The author makes no attempt to compare USSBS with the British bombing survey or show how USSBS's findings have been used and misused since 1945.<sup>2</sup> Finally, the publisher must be admonished for using such very small type in the long quotations.

Air power became a primary weapon in World War II. As the survey concluded: “. . . allied air power was decisive in the war in Western Europe.” (MacIsaac, 1976, p. 141) Those words should be carefully noted: “allied,” not just Army Air Force; “air power,” not just strategic bombing; and “Western Europe,” not all of Europe. Air power did not win World War II, nor did USSBS make that claim. While some have tried to make more out of air power's role in the war than justified, certainly it is true that aviation played a vital part in the Allied victory. But the atomic explosions over Hiroshima and Nagasaki ushered in a new era



*The piston-powered bombers of the forties dominated the post-World War II era. The B-29 Superfortress (left) was much used in the Pacific at the end of the war and was the USAF's first nuclear delivery vehicle. . . . Early follow-ons were the world's largest aircraft, the B-36 (top), shown in its August 1946 first flight, and the B-50A (above), a more efficient modification of the B-29.*

and may have invalidated some, if not most, of the operational value of USSBS's findings and of the experience of the strategic air campaign during World War II. At the same time, nuclear weapons bolstered the potential of the strategic bomber.

Since the war the Air Force has played a major role in U.S. defense. But its nuclear armed bomber, after initially dominating all, is no longer a primary weapon. By 1976 the very future of the strategic bomber is threatened. What has changed? Briefly, in the 30 years since the end of the war, the bomber's position has been eroded by technology, two limited wars, and by costs.

NORMAN POLMAR'S book *Strategic Weapons: An Introduction* † is a good summary of what has happened in the development of strategic weapons in the U.S. and the Soviet Union between 1945 and 1975. The book is brief and very readable. Among its other virtues is the balanced coverage of both major powers as well as missiles, aircraft, and submarines. Unlike many books, this one delivers more than is promised, for it can be used not only as "an introduction" but also as a handy reference; in addition to the text there are six useful appendices. The Pentagon and Air Force view is included in a 35-page extract of Chairman of the Joint Chiefs of Staff General George S. Brown's "United States Military Posture for Fiscal Year 1976." The other appendices list information on the various strategic bombers, missiles, and submarines of the nuclear powers.

Although it is a good book, it easily

could have been better. *Strategic Weapons* lacks the supporting footnotes of the other two books reviewed here. This omission as well as the lack of a bibliography seriously restricts the book's usefulness for further study. Second, the author fell off in his conclusions. To be blunt, Polmar pulled his punches, implying, hinting, but never directly expressing his views.

Polmar describes how the USAF, since only its bombers could deliver nuclear weapons, became the major service after the war, with the Navy and Army becoming token forces. Strategic bombers developed from the piston-powered B-29s, B-50s, and B-36s to the jet-powered B-47s and B-52s. These were the aircraft that the top Air Force leadership flew and with which it identifies. Despite the lack of strategic bombing during the Korean conflict, the USAF built its dominance over both the Soviet and the American defense establishment with the strategic bomber.

The golden age of the bomber lasted little more than ten years, however, and was challenged in the late 1950s by the land-based ballistic missile. The Air Force neglected ballistic missiles, electing instead to develop air-breathing missiles. While Polmar omits the case of the Navaho, a clear failure, he does tell how another, the Snark, was abandoned in 1961, only four months after being declared combat-ready. When the Russians put *Sputnik* up in 1957, Americans were jarred. The USAF got the liquid-fueled Atlas into operation in 1959, and while the Soviet missiles were larger, American intercontinental ballistic missiles (ICBM) were more numerous until 1970. For the

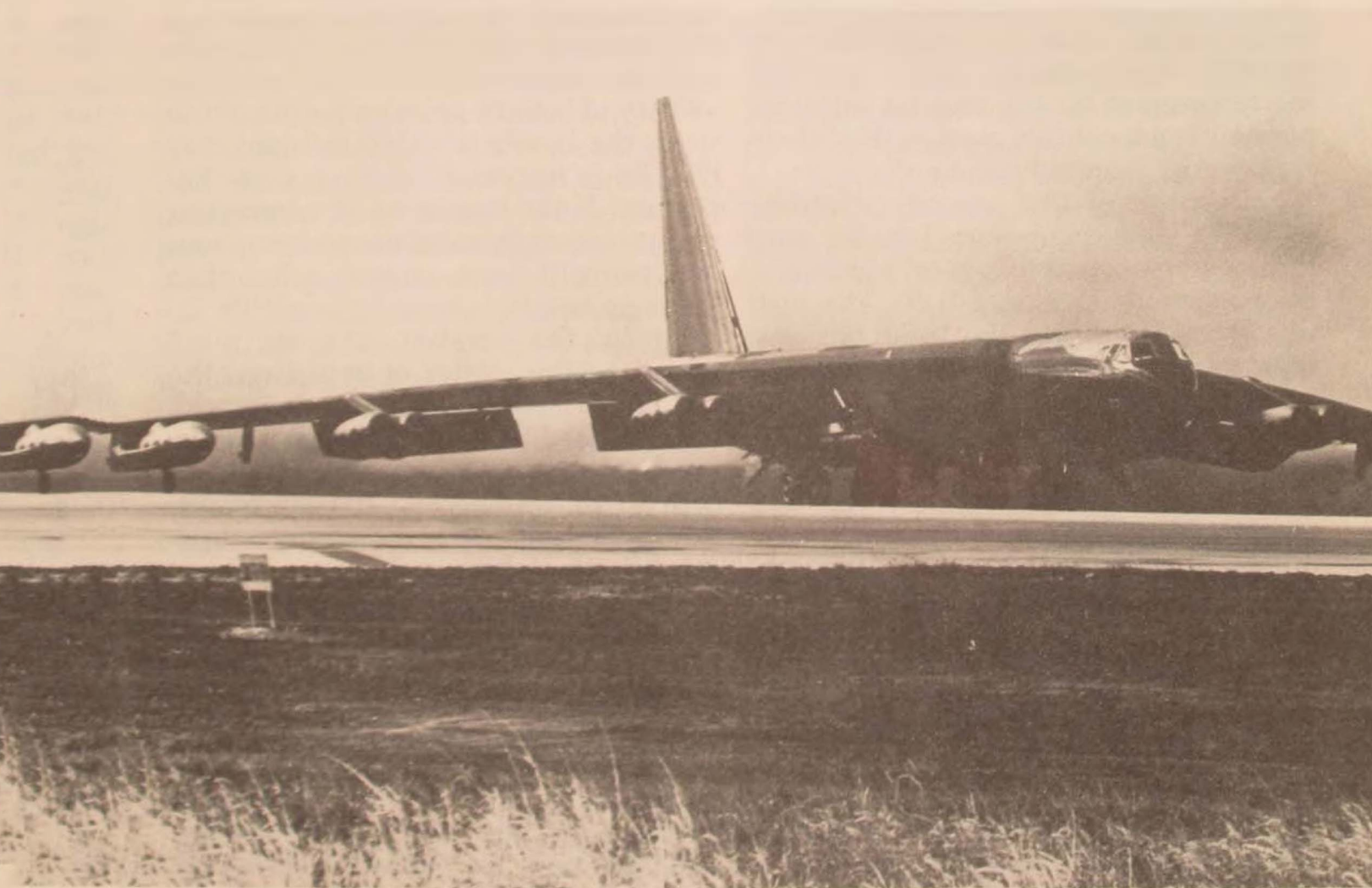
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† Norman Polmar, *Strategic Weapons: An Introduction* (New York: Crane, Russak & Co., 1975, \$7.50, \$3.95 paper), 161 pages.





*Jet-powered bombers came into their own in the 1950s with the B-47 Stratojet (left), and the B-52. The B-47, introduced in the late forties, is shown assisted in take-off by its 18 rocket units. The B-52 Stratofortress "Buff" shows the promise of being as indestructible as the venerable C-47.*



Russians accepted a poor second in strategic bombers, while contesting superiority in land-based missiles. And, because of its many advantages, the ICBM replaced the bomber as the chief strategic weapon of both countries.

The second technological challenge to the bomber came from the Navy. As Polmar indicates, carrier-based aircraft could pose little threat to the bomber's ascendancy, but the nuclear-powered submarine armed with ballistic missiles could and did. The first Polaris submarine armed with submarine-launched ballistic missiles (SLBM) went to sea in 1960.

Although we talk of the Triad of bombers, ICBM's, and SLBM's, in fact the bombers have become a supplement for the two missile systems. Quite a turn about, for as late as 1959 the commander of Strategic Air Command wrote that "for the foreseeable future, missiles will supplement and complement rather than replace the manned bomber."<sup>3</sup>

Polmar tells of Air Force efforts initiated in the 1950s to upgrade bomber performance with two follow-on programs: the supersonic B-58 and B-70. The first was in service during the 1960s but was then retired, while the second was canceled by the Kennedy administration in 1961 as "unnecessary and economically unjustifiable." (p. 30) Polmar relates how a third follow-on project, the FB-111, was forced on the USAF by then Secretary of Defense Robert McNamara. Although 66 of these bombers are presently in operation, the Air Force does not think it is the answer to its problems, claiming that its range and payload are too limited.<sup>4</sup>

In addition to the two ballistic missiles, the bomber's position was further undermined by changes in a third technology, improved antibomber defense. Polmar briefly discusses how Soviet fighters, ra-

dar, and surface-to-air missiles forced a change in bomber tactics from high-level operations to low-level attacks. These defensive advances have raised the question, Can the penetrating bomber survive?

The place of the strategic bomber also has been questioned because of the two wars America has fought in the last 30 years. In both wars high-level decisions prohibited the full-scale use of strategic bombing and the use of nuclear weapons. The use and usefulness of the B-52 in Vietnam have been seriously questioned. B-52 efforts against guerrillas in South Vietnam (more realistically against jungle) can be characterized as pathetic while the bomber's effect on North Vietnam has yet to be decided. Certainly both wars emphasize that the Air Force has other missions besides deterrence and nuclear war. In view of the efficacy of ballistic missiles for these missions, the bombers' other missions may now be as important or even more important. If the USAF is to fill nonnuclear roles successfully in future interventions and guerrilla wars, aircraft other than strategic bombers must be available.

Finally the bomber is being questioned on the matter of cost. Even the U.S., the richest country in the world, cannot afford all that it wants. With inflation becoming a greater and greater concern to the public and the politicians, this factor will have increasing significance in the future.

It is the combination of these factors, new technology, the experience of Korea and Vietnam, and cost that has challenged the Air Force's symbol, the bomber. In some ways airmen have an almost mystical bond with the bomber, critics snicker, like the cavalryman with his horse and the sailor with his battleship and now his carrier. All the Air



Force's chiefs of staff have flown bombers. Air Force autonomy and Air Force fame were won chiefly by the bomber. So we should not be surprised that the questioning of the bombers' future triggers great emotion and anxiety within the Air Force. But the importance of the issue demands clear and thorough thought.

THE issue is: Does the U.S. require strategic bombers? If so, should they be penetrating bombers? And if so, should they be B-1s, the Air Force's desired replacement for its present strategic bombers? Although this summer Congress provided funds to begin production of the B-1, the considerable cost and controversy surrounding the aircraft, and the Presidential election, may force a reassessment of this decision. First flying in December 1974, the Mach two aircraft has twice the payload, increased prelaunch and increased penetration survivability relative to the present bomber mainstay, the B-52. However, questions concerning the B-1's cost (latest estimates run between \$80 and \$100 million per copy), technical problems, and the need for an advanced penetrating bomber have stirred considerable reaction. *Modernizing the Strategic Bomber Force: Why and How*<sup>†</sup> by Alton H. Quanbeck and Archie L. Wood examines the issue in 98 pages of sober, detailed, scholarly text.

Based primarily on Department of Defense reports and congressional hearings, this study supports the need for a bomber force but not the need for a penetrating bomber or for the B-1. The

authors maintain that the bomber force serves as insurance against a failure of the missile force (although unexpected technological breakthroughs) and insurance against surprise attack, for an opponent must disable all three of America's strategic forces or face a devastating counterattack. American strategic bombers can serve as a counter to the greater throw-weight of Soviet missiles. The book tells, however, how missiles are superior to bombers in fighting a nuclear war, whether it is general or a limited exchange. It holds that bombers have little or no advantage over missiles in accuracy and that the correlation between the Soviet air defense and the American bomber fleet is insufficient to justify the bomber.

The study concludes that our present bomber force is more than adequate now and with minor modification it will be adequate for the foreseeable future. Further, the authors believe that a penetrating bomber has no significant military advantage over the standoff bomber; the latter, however, has a significant economic advantage, amounting, they estimated, to a savings of \$10 to \$15 billion in the first ten years. In what would appear to be deliberate omissions, the authors do not discuss such issues as the use of bombers as bargaining chips and force mix (ICBM's, and SLBM's, and bombers). Bomber flexibility and the vulnerability and problems of standoff bombers and cruise missiles are all too briefly mentioned.<sup>5</sup>

THE B-1 issue is of vital importance to all Americans and of special interest to members of the USAF. The need for

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<sup>†</sup> Alton H. Quanbeck and Archie L. Wood, *Modernizing the Strategic Bomber Force: Why and How* (Washington: The Brookings Institution, 1976, \$2.95 paper), 116 pages.

bombers, penetrating bombers, and the B-1 should all be carefully determined. In view of the gravity of the question and the cost and technical problems of the B-1, we must be sure that the best alternative is chosen. The decision to procure the B-1 should be made because it is the best of the possible alternatives: considering modified B-52s (with turbofan engines and rocket assisted takeoff), penetrating bombers without Mach two capability, and standoff bombers. The B-1 should not be built because of a technical imperative, or because of Air Force identification with bombers, or because

it will help certain areas of the economy.

In 1975 General George S. Brown stated it bluntly: "I consider the B-1 capability as a virtually indispensable element of our deterrent force."<sup>6</sup> Whether the American public and the U.S. Congress will agree remains to be seen. In any event, these three books will help provide a useful starting point—data, provocation, and alternatives. Certainly all of these and clear thought are needed to ensure that America's defense is properly maintained.

Radford, Virginia

#### Notes

1. David MacIsaac, editor, *The United States Strategic Bombing Survey*, 10 volumes (New York: Garland Publishing Co., Inc., 1976). While realizing that it is a judgment call as to which reports will or will not be published, I would recommend that three others be considered for future reprinting: "Fire Raids on German Cities," "Relative Performance of British and American Fighters against German Fighters: 1940-1945," but most of all, "Statistical Appendix to Over-all Report (European War)."

2. However, see MacIsaac's "What the Bombing Survey Really Says," *Air Force* (June 1973), pp. 60-63 and "A New Look at Old Lessons," *Air Force* (September 1970), pp. 121-27.

3. General Thomas S. Powers, "Ballistic Missiles and the SAC Mission" in John Loosbrock's *Space Weapons* (New York: Frederick A. Praeger, 1959), p. 93.

4. Speech by H. M. Darmstandler, Special Assistant to the Chief of Staff USAF, "The B-1 Bomber," to the Commonwealth Club, San Francisco, 24 July 1975.

5. However, see Alton H. Quanbeck and Barry Blechman, *Strategic Forces: Issues for the Mid-Seventies* (Washington: The Brookings Institution, 1973).

6. Quoted in Polmar, p. 131.

The genius of a good leader is to leave behind him a situation which common sense, without the grace of genius, can deal with successfully.

Walter Lippmann



## POTPOURRI

**Early Supersonic Fighters of the West** by Bill Gunston. New York: Charles Scribner's Sons, 1976, 256 pages, \$10.95.

Bill Gunston has done an appalling amount of research for the writing of *Early Supersonic Fighters of the West*. The depth of his research and the staggering amount of detail lend an uncommon degree of credibility to the work. Here we have a two-edged sword, however; the detail occasionally assumes an inertia of its own and relies unnecessarily on the inevitable acronym. But if one can withstand the jarring effects of these literary chuck-holes, the book becomes a standout, particularly for every fighter pilot who ever "slipped the surly bonds"!

This study emphasizes the political side of the weaponry procurement process. We have all known of this facet, of course, and how much it is driven by economics, but Mr. Gunston somehow shows more clearly its absolute power over the fate of ideas born in man's individual or collective genius. Armed now with the clarity of hindsight, the reader will undoubtedly reminisce over what might have been if various decisions in the life of an airplane had gone another way.

The author maintains a commendable objectivity throughout. His bias centers on aircraft and not on geographical boundaries. Surprisingly, he seems overly critical of the F-104 Starfighter, but mostly because it was not purchased in quantity by the country of its origin. This

is a small shortcoming, however, as he moves from one memorable aircraft to another and gives aging aviators a chance to remember, while giving younger pilots an opportunity to wonder what it must have been like to fly the planes that paved the way to Mach 3.

To the uninitiated reader, the by-chapter treatment of the several airplanes may seem somewhat like instant replays of the same scene. Although the book does not appear to have been written for the nonflying reader, for the aviator, it is anything but boring. *Early Supersonic Fighters of the West* is an absorbing book but one that misses greatness by a comfortable margin, due mostly to the same quality that makes it absorbing—its esoteric appeal.

LIEUTENANT COLONEL JAMES BUSTLE, USAF  
*Alexandria, Louisiana*

**A Man Called Intrepid** by William Stevenson. New York and London: Harcourt Brace Jovanovich, 1976, 486 pages, \$12.95.

This book is the story—as much as can be told even now—of Allied espionage in World War I, the "Thirty year armistice" (1918–38), and World War II. The main thrust of the narrative is concerned with the gigantic sweep of secret operations conducted under the personal direction of Prime Minister Churchill and President Roosevelt immediately prior to and during World War II.

The author, William Stevenson, is a

professional writer with half a dozen books under his byline. "Intrepid" is Sir William Stephenson (knighted for the exploits narrated in the book), a native-born Canadian and a man of extraordinary personal endowments. He had a brilliant career as a fighter pilot in the Royal Air Force during World War I, after transferring from the Royal Canadian Engineers. He was also involved in World War I espionage, becoming a protégé of Winston Churchill in those early years. Between the wars he became wealthy through diverse business interests, including his activities and interests in aviation, radio, and coding and decoding devices.

Stephenson's extraordinary accomplishments as Prime Minister Churchill's personal representative to President Roosevelt and as chief of the British Security Coordination (BSC) organization, headquartered in New York, are at the heart of this narrative. (The code name "Intrepid" was designated by Churchill himself, in appointing Stephenson to the crucial post. "Dauntless?" he questioned, searching for the right word; and while Stephenson waited—"You must be Intrepid!") From June 1940 until the closing of the BSC organization in August 1945, Intrepid and his thousands of volunteer covert operators, working in concert with equally secret American operations, exerted enormous influence on every phase and every significant decision of the war. Intrepid comes through as a shadowy and soft-spoken, but immensely powerful, individual.

The essential continuity between World Wars I and II becomes strikingly evident as this narrative of the secret war unfolds. The gigantic responsibilities of Churchill and Roosevelt ("Naval Person" and "Potus" in the secret war codes)—both weighted by the secret but some-

times incomplete knowledge from their espionage systems—become vividly clear. The ever-present requirement to conceal that which was known of enemy plans and intentions through the systematic analysis and solving of enemy codes (ULTRA), in order to preserve these capabilities for future use, posed wrenching choices throughout the war. Churchill's decision to sacrifice Coventry, in November 1940, to German bombers, rather than reveal British code-breaking capabilities to the Germans, was a notable example. The ultimate wisdom of this harsh decision, and others that could be mentioned, seems vindicated by the contributions of these intelligence systems as the war progressed.

Many well-known military and civilian leaders, and some not so well known, march through these pages and play their parts. It is an absorbing narrative and a book of the utmost significance to the history of World Wars I and II.

JAMES F. RISHER, JR., COLONEL, USAF(Ret)  
*Atlanta, Georgia*

**Strategic Air Command** by David A. Anderton. New York: Charles Scribner's Sons (Printed in Great Britain), 1976, 316 pages, \$12.50.

Many have probably forgotten that the Strategic Air Command into the 1960s had a powerful fighter force for long-range escort over the target, also as a nuclear weapon delivery system, and—as a swan song—a couple of squadrons of air defense interceptors at Torrejon, Spain. In 1955, this fighter force of Republic F-84s numbered 568, or more than the total bombers currently in the inventory. One of these fighters, a specially modified, swept-wing F-84 desig-



nated the K model, had an overhead hookup capability to a trapeze-like rig lowered from the reconnaissance version of the ten-engine B-36. A whole squadron of these fighters was modified and used in service with the GRB-36 carrier aircraft. "Carried near the borders, the RF-84K would detach, fly its reconnaissance mission while the mother ship loitered in the area, then return to hook on for the long cruise back to base."

David A. Anderton flashes these bits of esoterica at the reader and supports them with excellent photographic coverage. The photos he uses almost invariably show the aircraft serial numbers, to give that added fillip of unmistakable authenticity to his strong documentation of SAC over the years. Nor is he one to ignore the picturesque, usually earthy, speech of the SACman. Dutifully reported is the unblushing, genuine basis for the B-52's lovingly bestowed sobriquet, the inevitable acronym BUFF. Perhaps to the delight of the tankers, he left out the not-too-affectionate nickname for the KC-135 which, at least among us bomber types, was known as the Big Gas Bird.

It is fashionable in certain circles to denigrate the U.S. nuclear deterrent posture as a bankrupt ploy that will surely fail, even though constructed as national policy at the highest civilian levels of government. Since Strategic Air Command's missiles and bombers represent the bulk of that three-way deterrent, SAC is the focus of the disparagement of that policy. But, as David Anderton reports, the Triad deterrent "... idea seems to work; there have been no nuclear wars lately." Then, again, there have been no blackmail attempts by nuclear saber rattling in either the political or economic sphere.

One might observe that the book will surely add to the ease of documenting

the SAC forces if only by the handiness of the single-volume compression of a slew of facts on the command. For me, it was also a nostalgia trip back into SAC's halcyon days when the bombers numbered in the thousands and before the alert force was born.

LIEUTENANT COLONEL RICHARD E. HANSEN, USAF  
*Air University Review*

*Messerschmitt* by Anthony Pritchard.  
New York: G. P. Putnam's Sons, 1975,  
191 pages, \$10.95.

Despite the fact that World War II is becoming "ancient history" to the younger set, many people still remember the name of Messerschmitt when discussing the German air armada of this period. The mystique of the name lingers on. Even some thirty years later, this famed manufacturer of aircraft remains the subject of numerous books.

Whether or not you read this book depends on just how much you really want to know about the Messerschmitt. For many, the numerous aircraft photos will be enough to entice them. For others, the technical data or various anecdotes about Willy Messerschmitt and his aircraft may well be the determining factors.

*Messerschmitt* is pretty much a "mixed bag." The book is liberally sprinkled with interesting facts, stories, and excellent photographs. Beyond this, however, it is hardly a cohesive literary work. Instead (as intended) it is a straightforward account of the development of the various lines of Messerschmitt aircraft. Included are accounts of the legendary Bf 109, Me 262, and lesser-known experimental and limited production aircraft such as the huge Me 323D-1 six-engine bomber.

One of the more interesting stories which Pritchard has included concerns Hitler's early reluctance to pursue development of the turbojet aircraft and then his later decision to develop the turbojet after all as an ultimate weapon with which to win the war. Fortunately for the Allies, Hitler was obsessed with the idea of developing a jet bomber instead of the urgently needed fighter. Hitler's demands impeded the development of the sorely needed jet interceptor, which had to be surreptitiously labeled as a "fighter-bomber" to pacify the Fuehrer. The result was the famed Me 262, which was to wreak havoc on Allied bombers during the closing days of the war. Unfortunately, there are not enough of these stories in the book, and we catch only brief glimpses of Willy Messerschmitt and intrigues within the Third Reich.

Although this book was not intended as a literary work, it could have been vastly improved with a little more emphasis on literary style and attractiveness. There are many accounts of the famed Messerschmitt, and Pritchard's is neither the best nor the worst.

CAPTAIN ROBERT S. BARTANOWICZ, USAF  
*Department of History, USAF Academy*

**World Power Assessment: A Calculus of Strategic Drift** by Ray S. Cline. Washington: The Center for Strategic and International Studies, Georgetown University, 1976, 173 pages, \$4.95 paperback.

Ray Cline has served in the intelligence community for more than thirty years, first with the OSS, and later with the CIA and State Department. Since 1973, he has been Executive Director of Studies at Georgetown University's Center

for Strategic and International Studies in Washington. Cline's book is very much in the tradition of two earlier twentieth-century theoreticians, Sir Halford Mackinder, a geographer, and Hans Morgenthau, a political scientist. Mackinder, of course, emphasized the significance of geopolitics to an understanding of global military strategy. Morgenthau, in his now classic *Politics among Nations*, described the "elements of power." Cline accepts the geopolitical and power-political assumptions of these authors and attempts to explain the shifting forces in the global balance of power and prescribe a remedy for the reassertion of U.S. global leadership.

Cline draws upon recent geophysical evidence of the existence of giant tectonic plates to introduce the reader to "politectionics," a term he uses to characterize the formation and breakup of power groupings across the geographic and ideological spectrum. Accurately noting that general perceptions of power often exceed in importance the essence of real power, he proceeds to devise a formula which can capture "common perceptions" of the stature of major nations. Graphically, his formula, or in his words "macrometric equation," is deceptively simple:  $P_p = (C + E + M) \times (S + W)$ .

He argues that perceived power is the sum of critical mass (population + territorial size) plus economic capability plus military capability, multiplied by the sum of a nation's strategic purpose and its will to pursue its national strategy.

Utilizing this formula, Cline seeks to explain what he views as the diminished influence and strategic confusion of contemporary U.S. national security policy. While he finds that the United States and the Soviet Union continue to share a rough parity of global power, he con-



cerns himself with how further slippage in the U.S. position can be averted if not reversed. Cline calls for a new national strategy to stabilize and reinforce the global balance of power more to the favor of the United States. He concludes by calling for the creation of a new "oceans alliance," comprised of nations in key locations across the globe.

*World Power Assessment* is a thought-provoking counterthesis to the widely prevailing "end of alliance" theories, so common in the wake of the U.S. experience in Southeast Asia. Despite the initial attraction of Cline's work, it stands on speculation and subjective judgment. How, for example, can one *measure* perceptions of power, and is that not asking, by analogy, "How much are your values?" Cline recognizes these limitations but does not satisfactorily resolve them. To take the issue a step further, can one legitimately talk of "common perceptions" of power in the realm of military, economic, and human resources, let alone national will and national strategy?

Cline's dilemma is one shared by all national security analysts, that is, how to evaluate comparative national capabilities. Geopolitical constants would seem relatively simple to assess, but such is not the case. Invariably most analysts give advantage to nations of large land mass, population, and gross national product. We are reminded that only nations of great size and huge numbers have clout in the international arena and possess potential for superpower status. Yet the outbreak of a conventional two-front war might quickly diminish size as an asset, and a large but poorly fed and illiterate population surely constitutes a disadvan-

tage in war or peace. Similarly, the deception inherent in the uncritical acceptance of gross national product figures ought to be more widely apparent than is the case. Cline, indeed, alludes to the importance of *what* is produced as well as *how much* is created.

Perhaps more surprising than Cline's understandable difficulty with "elements of power" are his expectations of a new ocean's alliance. Tragic as was the U.S. experience in Vietnam, are we already too far removed to recall that even our NATO allies provided no direct support in our efforts and, indeed, very little comfort? Why should we now expect that these friends, and other less friendly states, would commit themselves to a new alliance framework? The author's suggestion that states such as South Korea, Brazil, India, and South Africa be considered as alliance partners prompts a fury of questions. What might incline them to join a global alliance led by the United States? At what cost would it be to the U.S. in view of the nature of those governments? And what would the results be to existing U.S. policies, which focus on ensuring interdependence not cultivating national rivalries and historic jealousies?

Cline's work has merit as a provocative and highly readable countercurrent view, but its assumptions, methods, and conclusions are wanting. A more fruitful approach to an assessment of U.S. global leadership might be a thoroughly objective analysis of U.S. leadership strategy, which focuses not only on means but on strategic goals.

JAMES E. WINKATES, *Air War College*

# the contributors



DR. GEORGE H. HEILMEIER (Ph.D., Princeton University) is Director of Defense Advanced Research Projects Agency (DARPA). With four earned degrees in science and engineering, he worked for a decade on the technical staff of RCA Laboratories; there he discovered several electro-optic effects in liquid crystals, leading to the first liquid crystal displays for calculators, watches, etc. Appointed a White House Fellow for 1970-71, he served as a Special Assistant to the Secretary of Defense. As Assistant Director of Defense Research and Engineering (1971-75), he was in charge of DOD research and exploratory development in electronics and physical sciences. In 1975 he went to DARPA. Dr. Heilmeier has received numerous honors, including two David Sarnoff awards in science, the Arthur Flemming Award for Outstanding Young Man in Government, and the DOD Distinguished Civilian Service Medal. He is holder of 15 U.S. patents.



LIEUTENANT COLONEL THOMAS C. BLAKE, JR. (M.B.A., George Washington University) is assigned to the Deputy Chief of Staff, Development Plans, Hq Air Force Systems Command. A tactical aircraft navigator with some 1000 combat hours, he has had overseas assignments in Japan, Europe, and

Southeast Asia. Other assignments have been at Hq TAC and at Hq USAF. Colonel Blake is a graduate of Squadron Officer School, Air Command and Staff College, and Air War College and is a previous contributor to the *Review*.



WING COMMANDER ALAN PARKES RAF, (B.Sc., University of Birmingham, England) is Deputy Chief, Training Division at Hq Eighth Air Force, Strategic Air Command, Barksdale AFB, Louisiana. He has spent much of his Royal Air Force career as a V-bomber pilot and has also served as Personal Staff Officer to the Deputy Commander in Chief, RAF Strike Command. From 1973 to 1975 he commanded No. 50 Squadron (Vulcans). Wing Commander Parkes is a graduate of the RAF Staff College and of the USAF Air War College class of 1976.



MAJOR GENERAL RICHARD C. HENRY (USMA; M.S., University of Michigan) is Vice Commander of the Space and Missile Systems Organization (SAMSO), Los Angeles Air Force Station, California. After graduation from West Point, he completed pilot training and was assigned to Strategic Air Command as a B-50 crew member. He has since spent ten years with SAC, seven with Tactical Air Command, four with NASA, and the remainder in various staff assignments. He is a command pilot with more than 4000

hours, including 207 combat missions in the F-4 in Southeast Asia. His experience with manned aircraft, manned and unmanned spacecraft, and ballistic missiles gives him singular qualification for his post at SAMSO, which he assumed in August 1974. General Henry is a graduate of the National War College.



MAJOR AUBREY B. SLOAN (M.S., University of Southern California) is the Space Shuttle Facility Requirements Manager and Unit Environmental Coordinator, Space Transportation System Program Office, Space and Missile Systems Organization. He previously served as Chief, National Range Plans Section, DCS/Operations, Hq Air Force Systems Command, and Range Control Officer, Hq Air Force Eastern Test Range. Major Sloan is a graduate of Squadron Officer School, Air Command and Staff College, and the Industrial College of the Armed Forces.



LIEUTENANT COLONEL JOHN CHILD, U.S. Army, (M.A., American University) is JCS Military Secretary on the U.S. Delegation to the Inter-American Defense Board, Washington, D.C. He is an Army foreign area specialist on Latin America and has resided in South America for 18 years. He has taught Spanish at the U.S. Military Academy, West Point, where he prepared an award-winning educational TV program on Che Guevara in both English and Spanish. Colonel Child is a graduate of the Armed Forces Staff College.



MAK WYNN is the pen name of a major who wishes to remain anonymous to avoid any possible embarrassment to his associates or career field. He was shocked by falling from an outstanding OER in the previous system to an average—three—rating in the new system. He hopes that how he came to terms with himself will help the half of the officers in the Air Force (50,000 or so) who can be rated no higher than three under the new system.



CAPTAIN JOSEPH A. McGRATH, JR., (B.S., St. Joseph's College) is an instructor and evasion and escape specialist at the USAF Special Operations School, Tactical Air Command. His previous assignments have been in the intelligence field with duty at a direct air support center in Vietnam, an all source information center and tactical fighter wing on Okinawa, and Special Operations duty in the CONUS. Additionally, he is the Sub-Saharan Africa specialist at USAFSOS. Captain McGrath is a graduate of Squadron Officer School.



MAJOR ROBERT W. CHANDLER (Ph.D., George Washington University) is an international politico-military affairs officer, Directorate of Future Force Structure Studies and Evaluation, DCS/Plans, Hq Strategic Air Command. Major Chandler has also served in the transportation, intelligence, and planning and programming areas. In addition, he has been a political science instructor with the University of Maryland and University of Nebraska at Omaha. His forthcoming book, *War of Ideas*, concerns U.S. psychological operations in Vietnam.



MAJOR WILLIAM E. GERNERT III (M.B.A., Wharton School of Commerce and Finance) is an action officer in Colonel's Assignments, Hq USAF. He has served in a variety of personnel management jobs, including an AS-TRA tour in AF/DPX and as executive officer to the USAFE DCS/Personnel. He has also served as a plans officer in USAFE/XP. Major Gernert is a Distinguished Graduate of Air Command and Staff College and has previously contributed to *Air University Review*.



AMBASSADOR JOHN PATRICK WALSH (Ph.D., The University of Chicago) is the State Department Adviser to the Commander of Air University. He is a Foreign Service Officer who has had a variety of assignments at home and abroad, including being Ambassador to Kuwait. He was also an International Fellow at Harvard University.



KENNETH P. WERRELL (Ph.D., Duke University) is Associate Professor of History at Radford College, where he teaches U.S. and military history. After graduating from the Air Force Academy in 1960, he flew WB-50s with the 56th Weather Reconnaissance Squadron in Japan. He has worked as a contract historian for the Air Force and as a military historian for Operations Research, Inc. Currently, he is writing a book on the Eighth Air Force in World War II.



The Air University Review Awards Committee has selected "Sovereignty and the New Violence" by Major Dennis W. Stiles, USAF, as the outstanding article in the July-August 1976 issue of *Air University Review*.



*Mrs. Amoretta M. Hoeber, a Senior Analyst at Systems Planning Corporation, Arlington, Virginia, accepts the Air University Review awards plaque from Editor Colonel Glenn E. Wasson for having written the outstanding Review article published in fiscal year 1976. She was also presented a \$200 U.S. Savings Bond.*

## AIR UNIVERSITY REVIEW AWARDS PROGRAM

Mrs. Amoretta M. Hoeber, of Arlington, Virginia, has been selected by the Air University Review Awards Committee to receive the annual award for writing the outstanding article to appear in the *Review* during fiscal year 1976. Her article, "Some Myths about the Strategic Balance," was previously designated "outstanding" in the July-August 1975 issue. The bimonthly winners for the past year were Mrs. Amoretta M. Hoeber, July-August 1975; Captain Michael O. Wheeler, USAF, "The Employment of Tactical Air Power: A Study in the Theory of Strategy of Sir Basil H. Liddell Hart," September-October 1975; Major Dennis W. Stiles, USAF, "Air Power: A New Look from an Old Rooftop," November-December 1975; Dr. Charles A. Russell, "Transnational Terrorism," January-February 1976; Major General Abner B. Martin, USAF, "The B-1: Strategic Deterrence into the Twenty-first Century," March-April 1976; and Lieutenant Colonel Bobby D. Wagon, "Communication: The Key Element to Prisoner of War Survival," May-June 1976.



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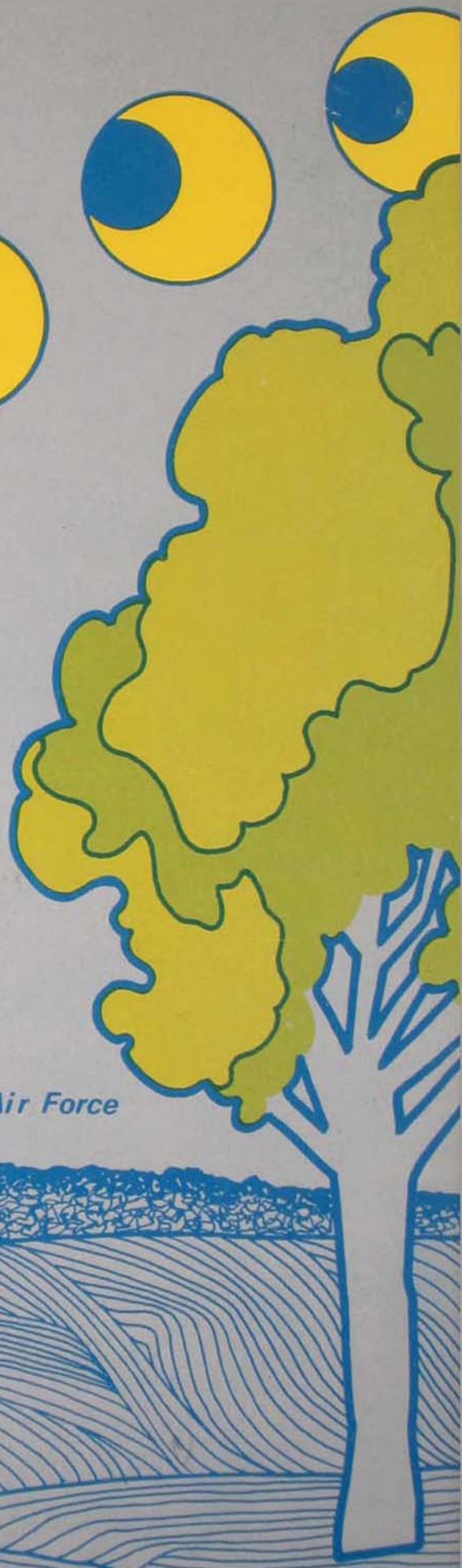
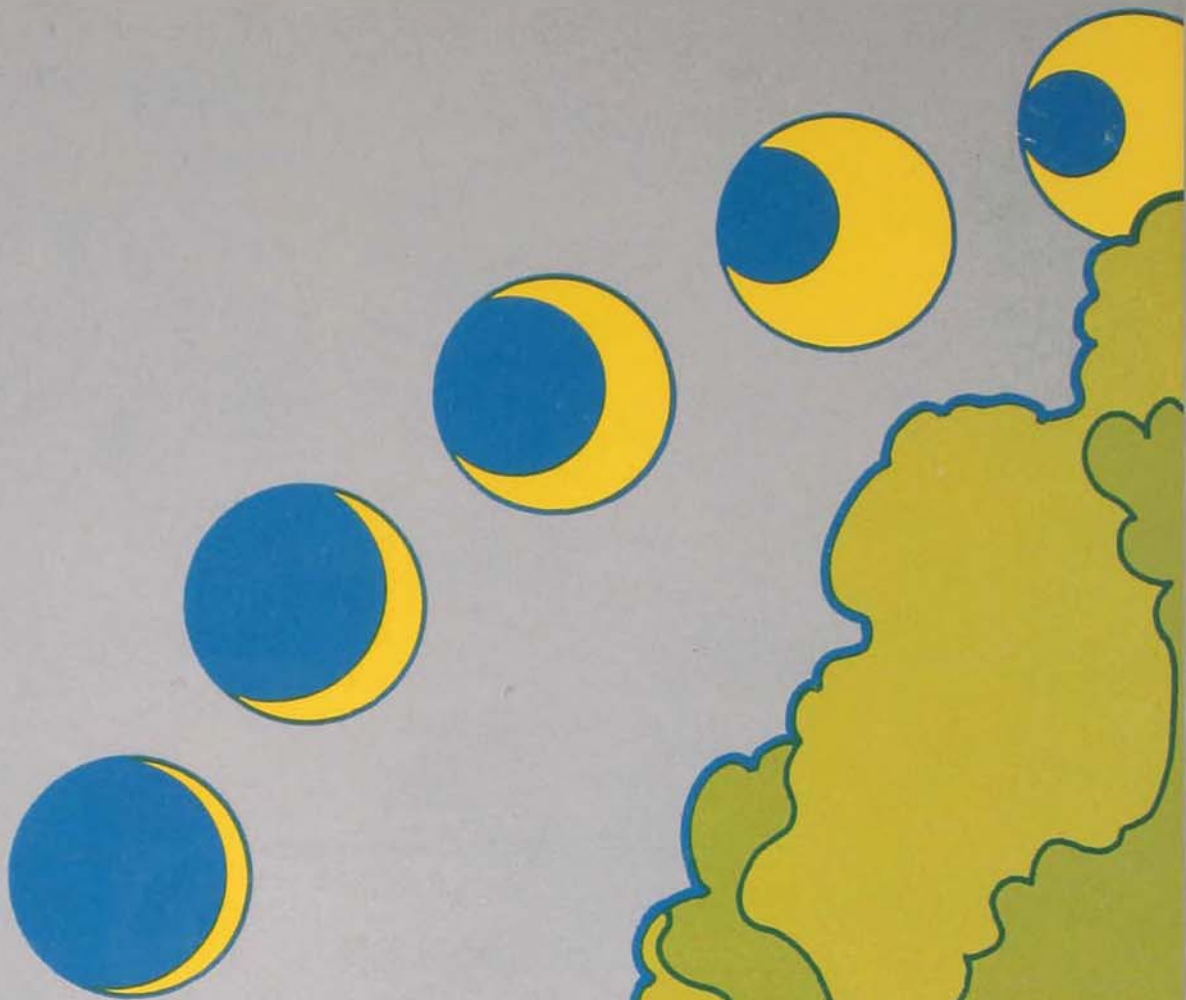
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