Summer Selections

- Revisiting Air Defense
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- "Downtown" Once More
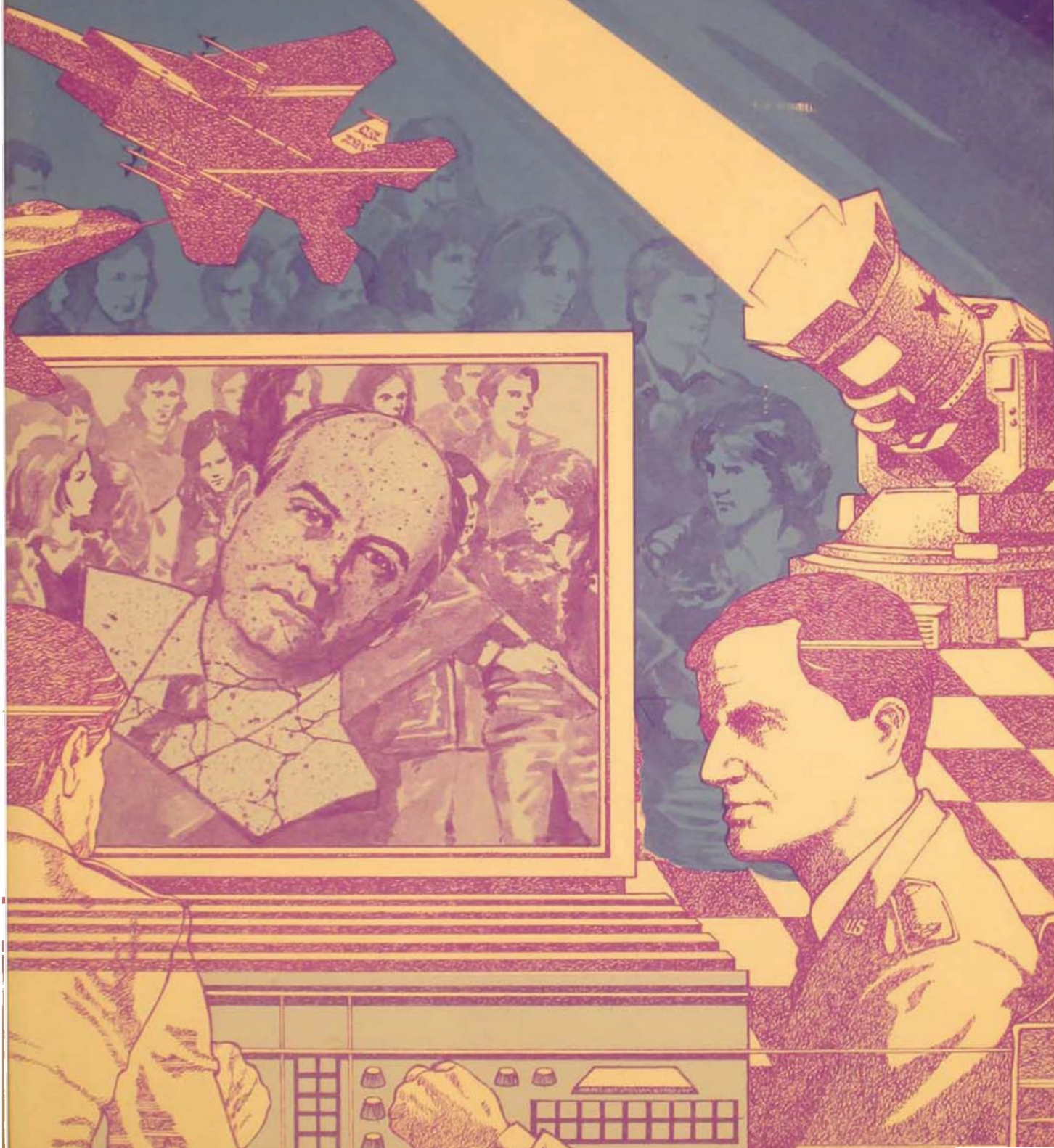
AIRPOWER
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EDITORIAL

A Matter of Mission

THE challenge of the senior cadet to the underclassman was, "Mister, what are the three most important things to an officer?" The expected reply was, "Sir, mission, mission, and mission, sir!" What was so magical about those words? Why did senior cadets and the institutional wisdom of the corps that they represented place so much emphasis on that repetitive, rote response?

In that simple formula, it seems now, was the distilled legacy of a thousand engagements, the hard-won wisdom of legions of predecessors. It was the fundamental, guiding principle on which all were expected to conduct their professional and private lives in the military.

The mission: the only valid yardstick by which one's motives, concepts, and actions can be measured in the world of military reality. The mission is the manifestation of the collective result sought. It may be as delightfully obvious as dropping the center span of a high bridge or as abstract as affecting an enemy's will to continue the fight. The definition of one's mission varies considerably in scope and complexity, but there are some corollaries to one's mission that must always be considered. What are the missions of other people and other units? What are the missions at higher levels of activity? What are the priorities of the missions that abound in any complex military operation?

These are important considerations, for it is only in the context of the aggregate mission that one can begin to truly appreciate the place and importance of one's own. Perhaps a few examples can bring this concept into focus.

While coordinating the directed loan of some mobility equipment, an officer was dismayed to hear from the more senior "owner" of the resources that they would not be loaned because of the potential degradation to the owner's "primary" mission. After pointing out that the owner's commander himself had directed the loan, the junior officer was informed that the resources existed in the first place because of the foresight of a functional community within the Air Force and they were not meant to service every "pop-up" operation that might occur. The owner vowed to fight the order to the very top of his functional management chain, if necessary. How far up that particular avenue he progressed is unknown, but the equipment was turned over the next day. What had happened was a breakdown in the more senior officer's appreciation of mission. Charged with the judicious use of the resources entrusted to him, he had reasoned that using those resources on something not mandated by "regulation" would be an abrogation of his responsibility to husband his capabilities. What was missing, of course, was the need to consider the larger ramifications of "mission," the ultimate purposes for which the resources might exist in the first place.

There are positive examples of mission appreciation, and the following is freely purloined from another as best it can be recalled. While conducting a walk-through inspection of a communications repair shop, the commander asked a technician what his mission was. Hearing that it was to repair and maintain "widgets," our exemplar of mission appreciation replied that while true, the answer was not altogether correct. As explained, the real mission of the technician was to ensure that the aircraft cocked on the alert ramp became airborne in the prescribed amount of time. Anything in which the technician might engage himself that did not contribute to that timely takeoff was inappropriate effort. Did the technician's "job" change? No, but rest assured that his appreciation of his mission did, and to the overall advantage of his unit and the Air Force. One should add that it didn't hurt the officer either, having now passed into the flag ranks.

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So, what does it all mean? Only that to fully appreciate one's mission, one must look beyond immediate requirements and imperatives to find the context that will provide the true meaning of mission. It is in this quest that the real richness of the officer trainee's rote response will become evident.

"Sir, mission, mission, and mission, sir!"

KWG

ricochets

Letters to the editor are encouraged. All correspondence should be addressed to the Editor, Airpower Journal, Walker Hall, Maxwell AFB AL 36112-5532. We reserve the right to edit the material for overall length.

AIRPOWER STRATEGY

I believe the Air Force, as an institution, has failed to exploit the potential of air power across the spectrum of conflict, and until such time as the Air Force develops an air power strategy, the control of air power will continue its migration to the sister services.

Whereas the Navy and Army use the maritime strategy and AirLand Battle as operational blueprints for their force development, the Air Force seems to rely upon technological breakthroughs to chart its course. As a direct result of this process, we have failed to achieve our potential except at the upper end of the spectrum of conflict, where air power continues to dominate. For 40 years the Air Force has invested heavily in this upper-spectrum force structure and continues to do so in systems like the B-2 bomber and MX missile. Our efforts have resulted in systems whose exceptional responsiveness and combat capability have removed the reasonable expectation of their actual employment.

Rather than securing our national interests for all time, this situation has produced a perceived stalemate of nuclear forces that serves to emphasize the threats posed by lower-spectrum conflict. Our limited successes against these threats have eroded the nation's former confidence in air power, replacing it with a near-total reliance on land and naval actions. In the process, serious challenges to the organizational effectiveness and command and control of air power

have made potentially disastrous inroads into Air Force capabilities.

Army and Navy commanders have long recognized the absolute necessity of air power for the successful prosecution of their campaigns. To remedy what they consider to be ineffective air support by the Air Force, they have sought to develop indigenous air power in the form of Navy/Marine air wings and, most recently, Army attack helicopters. With each addition to their air forces, a backward step has been taken, and today we face a multiservice attack on the continued existence of an independent Air Force.

Congressionally mandated programs, such as the current drive to develop joint doctrine, attempt to reshape the US force structure, making it trimmer, more effective, and better capable of addressing the lower-spectrum threats. In response, the services have employed various stratagems to ensure that these programs result in end products that are supportive of existing organizations and doctrine. The Air Force has been hampered in this process in that it lacks a maritime strategy or an AirLand Battle to serve as a unifying foundation for its efforts.

Such a foundation is not provided by our basic doctrine. AFM 1-1, *Basic Aerospace Doctrine of the United States Air Force*, tells but a partial story of air power. It focuses on what the Air Force does—almost to the complete exclusion of why and how. Without clear top-down guidance, these questions of why and how are answered in as many ways as there are commands and theaters. When critical questions of organizational command and control are raised during joint-doctrine development, the other services can cite as many Air Force supporters of their "Air Force-only-for-support" role as we

DEVELOPING A LONG-TERM NATIONAL STRATEGY

Shifting Imperatives

Maj Gen Perry M. Smith, USAF, Retired*

THIS article seeks to yank people out of a mind-set that assumes that an extrapolation of the present into the future is good enough for purposes of planning and making strategy.[1] This aim is particularly important because the pressures for continuity of planning and policy will be quite strong now that George Bush is president. Most long-range planning assumes that things will pretty much remain the same in the future. Thus, all we have to do is examine a few variables, such as technology and the changing nature of the Soviet threat, and we will be able to make good forecasts, plans, and programs. Because we and our allies in Western Europe assume that the Soviet Union will remain the predominant adversary for the foreseeable future, there is little point in spending
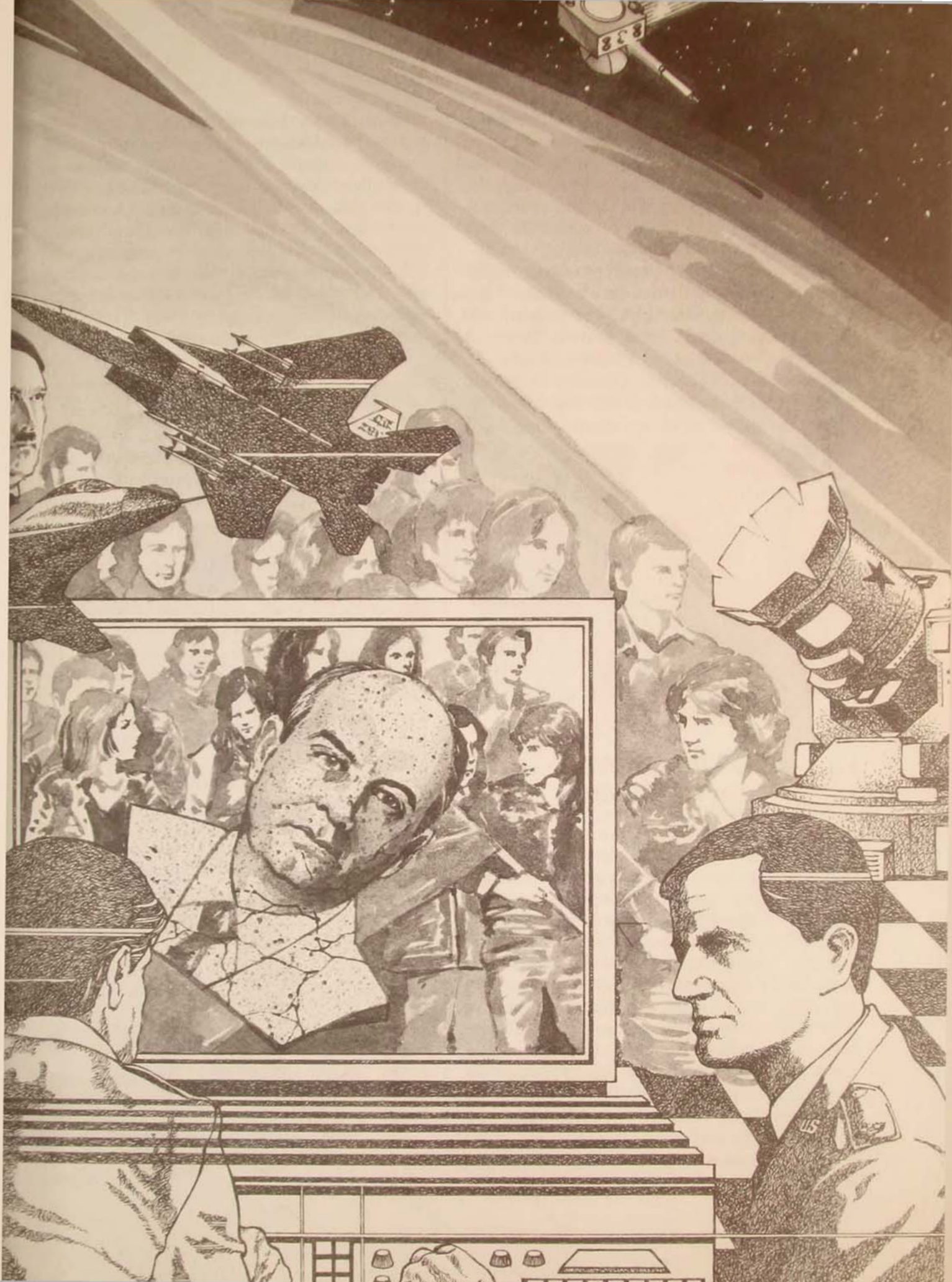
time thinking about emerging adversaries. This mind-set has served us well in the past because the Soviets have remained the big threat; however, it is time to go through the agonizing process of identifying other potential adversaries as our relationship with the Soviet Union changes.

Continuation of current planning, strategy, and policy will not be adequate if the United States aspires to be the preeminent actor on the world stage during the next century. Over the next two decades, we can expect explosive technological transformations in the developed world together with changing patterns of economic, financial, political, and military interplay among all nations. Good old American pragmatism and muddling through by the use of tiny, incremental steps to avoid risk are no longer tenable practices. We need visionary leadership, innovative strategic planning at many levels of government, and risk-taking—both in Washington and internationally. Unless we set specific, long-term goals and priorities and stick with them, we are doomed to slide—like the dinosaurs—into a morass of posthistoric mud.

Alternatives for the Future

Planners must consider a number of alternatives for the future so that planning and programming will involve more than a simple extension of current practices into the distant future. For instance, they should consider a possible collapse of the world's major economies, leading to a worldwide depression. If this should occur, planners must anticipate the emergence of radical leaders who promise simplistic solutions to desperate populations. They must study the lessons of the 1930s so that democratic states—though weakened by the depression—can prevent the rise of any future Hitlers or Tojos.

Further, we should allow for a Soviet Union that would be both economically and militarily formidable as well as one that is considerably less threatening. A stronger Soviet Union might serve to strengthen our system of alliances but might also require us to increase spending on national defense. On the other hand, a weaker Soviet Union could undermine our alliances and probably lead to a considerable reduction of US forces stationed overseas.

Dealing with Changing Threats

We must also examine possible new threats and pay particular attention to those involving high technology. The United States would then have to respond by pursuing a sustained, vigorous program of research and development to be competitive in this area. Clearly, dramatic changes in the next 20 years will make forecasting, planning, and programming more difficult and challenging than it has been since the end of World War II. One danger is that the US military may begin to resemble the French military of the 1920s and 1930s; that is, we may learn the wrong lessons from previous wars and make the wrong choices regarding our options and the development of strategies, doctrines, and tactics. Equally disastrous, we may become so preoccupied with routine, day-to-day activities that we will not think, conceptualize,

and plan. In any case, we must not allow budgetary austerity, doctrinal rigidity, bureaucratic infighting, and Washington "activity traps" to prevent us from doing some creative thinking and bold planning. If our planning is nothing more than the extrapolation of present policy, we will soon be in serious trouble. We should examine our long-range plans to see if they have the same goals and priorities as our short-range plans and programs. If they do, the long-range plan is probably of little value.

A Long-Range View of the Soviet Threat

The United States has been rather fortunate, in that its principal adversary—for all its impressive military power—has for over 40 years remained a mediocre military threat in terms of technology, a modest economic competitor, and a model of diminishing attractiveness to both developed and underdeveloped nations. The massive Soviet military threat has been worrisome indeed and is likely to remain so for some time. But in many areas, the Soviet Union has lagged behind the United States—particularly in its incorporation of modern technology into military systems.

For example, the introduction of the F-15—representing a revolution in aviation technology—to Europe in 1977 created a US advantage over Soviet and Eastern European aircraft and aircrews that seemed almost insurmountable, at least for a few years. We have continued to widen the gap in some areas, but the Soviets have managed to close it in others. Although they have made some progress on their own initiative, many advancements are the result of their stealing our secrets. Significantly, none of our progress derives from our stealing their secrets. Any nation that must rely heavily on pilferage is doomed to lag behind in its military capability. Despite Department of Defense (DOD) budgetary squeezes, lengthy research and de-

velopment cycles, and a highly politicized system of programming, budgeting, and congressional approval, the United States will likely stay ahead of the Soviets in overall military technology for at least the next 20 years.

Further, the Soviet political and economic system is so badly flawed that it will not be able to deal as creatively with the information/computer age as will the United States, Japan, Korea, and a number of states in Western Europe. This weakness, which is endemic to all totalitarian or authoritarian systems, will have an even more

pronounced effect on Soviet economic and military strength in the years to come. For example, the personal computer (PC) is making an enormous impact on many nations. As of 1988, the Soviets had approximately 200,000 personal computers—most of which are primitive by our standards—but Americans are buying that many PCs per month. The best memory chip that the Soviet Union can mass-produce has a 32-kilobyte capacity, whereas the United States and Japan are now mass-producing megabyte chips. Furthermore, the telephone system in the Soviet Union is so unreliable that the use of modems, electronic mail, and electronic bulletin boards is only a dream. In view of the state of computer technology in the United States, Japan, and much of Western Europe, we can see why many international econo-

mists consider the Soviet Union one of the underdeveloped nations of the world.

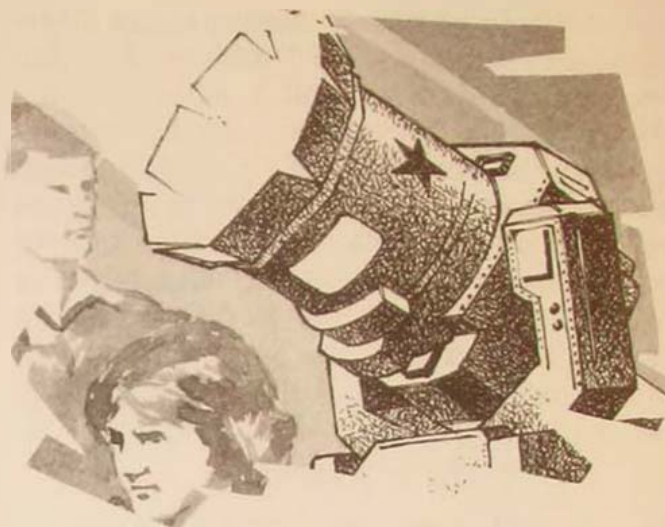## Dealing with High-Tech Threats in the Future

If a high-tech threat from some nation other than the Soviet Union should emerge in the next couple of decades, the United States will have a very difficult time staying ahead of that threat. Hence, we should begin to devote some time and effort to dealing with the possibility of emerging threats—nations or alliances of nations that would compete with us across the entire spectrum of national power and not just in military and political areas. We must shift our attention, at least in part, away from the Soviet Union and develop strategies, weapon systems, tactics, and doctrines that will allow us to deal with different and potentially more dangerous threats. The arms races that we will be engaged in by the year 2010 will not necessarily lead to war, but one or more will be high-tech races, and it is time we began to prepare for them.

A Retrospective View of the World from the Year 2010

What follows is a brief retrospective history of the more important highlights of the next two decades, looking back from the autumn of 2010.

The Fall of Gorbachev

The fall of Gorbachev in the early 1990s remains, almost 20 years later, an important event in world history. From the perspective of 2010, we can now fully understand why the hard-liners tossed him out. Because of the rioting throughout the Soviet Union, the demands for indepen-

dence from ethnic groups, and the rise of Islamic fundamentalism within the Soviet state, the hard-liners felt that they had no choice. The pattern of 1,000 years of authoritarian control over a diverse population overcame the few years of openness and freedom of expression that Gorbachev encouraged. An additional rationale from the hard-liners was that they feared people who were not under tight control. Historically, Russian and Soviet leaders have favored compliance over consensus. When the hard-liners realized that they were losing both elements, Gorbachev was removed.

A Return to Authoritarian Control

After Gorbachev was ousted, tight controls on the population returned, but "putting the genie back in the bottle" caused much agony and bloodshed. The Soviet political and economic system paid a very high price for the return to tight authoritarian control: (1) many of the country's best and brightest people fled in the 1990s and are now making significant contributions in Western societies (the United States has been the nation of choice for about 50 percent of the emigrés); (2) because the Soviet military played a prominent role in restoring order, training in the more traditional military skills suffered for a few years; and (3) Soviet ethnic groups, who were so brutally suppressed in the 1990s,

continue to harbor a residual hatred of the military.

Since the end of *glasnost* and *perestroika*, the Soviet economy has stagnated. Access to personal computers and copying machines remains a privilege for trusted elites, and the flow of ideas and information throughout the society is almost as difficult now as it was in the period prior to Gorbachev. The Soviet Union has had a terrible time dealing with the information/computer age, which has now been in full bloom in developed nations for more than a decade. (Historians now date the entry of a country into the information/computer age from the time there is at least one computer and one communications modem in 50 percent of the country's households.) Japan and the United States entered this information/computer age in the 1990s, and a number of Western European and Asian nations reached it soon after the turn of the century.

Japan's Rise to Military Prominence

In the past 20 years, the road for the Japanese has been quite rocky in a number of ways. There has been a resurgence of anti-Japanese feeling throughout East Asia and, to a lesser extent, in the United States and Western Europe. In addition, the Japanese have experienced a considerable brain drain, as many of the more talented, younger Japanese have taken lucrative positions in the United States, Western Europe, Brazil, Canada, and elsewhere. This exodus, in combination with the heavy social overhang of a large elderly population, has slowed the rate of economic growth in Japan to about 3 percent in the first decade of the new century.

In fiscal year 2011 the Japanese will spend slightly more than 3 percent of their gross national product (GNP) on defense. Although they do not have nuclear weapons, most knowledgeable observers give them credit for having a capable military, ranking second worldwide in overall technological capability. The Japanese moti-vation for this slow but steady military buildup was quite complex. First, the United States encouraged the Japanese to bear a larger portion of the defense burden in East Asia. Further, the reduced faith in American deterrence, the increased power and prestige of the People's Republic of China, the diminished memories of Japanese militarism during the 1930s and 1940s, and the natural tendency of an economic superpower to have a defense posture adequate to defend vital interests all had some effect on this buildup. In fact, the Japanese now make the best fighters, helicopters, tanks, destroyer-sized surface ships, radars, sensors, lasers, and photonic systems in the world.

A fascinating arms competition is going on between the United States and Japan for the high-tech side of the arms-sales business. Underlying that competition is the potential for a high-tech military arms race. However, much depends on the evolution in political and economic relationships during the second and third decades of the twenty-first century. Up to now, the first decade has seen more cooperation than competition between the United States and Japan. Japanese leaders, realizing how important the American market is to their economy, have fought hard against the wave of emerging nationalism in Japan. But the fact that the United States and Japan are now the world's greatest superpowers, militarily as well as economically, makes the status of their relationship an extremely important and delicate issue for the foreseeable future.

Explosive Growth of the Chinese Population

China has avoided the return to totalitarian control that took place in the 1990s in the Soviet Union. Many factors have helped the Chinese avoid most of the turmoil of openness: (1) over 90 percent of the Chinese are ethnic Hans, and the dissident minorities have not been a major problem, except in a few outlying areas; (2) Maoism

did not experience a major resurgence, largely because of the "never-again" attitude that emerged from the Cultural Revolution; (3) the Chinese have a cultural affinity toward entrepreneurial pursuits; and (4) communism was not the predominant political system in China long enough to overcome the centuries of Confucianism that preceded it.

But the Chinese evolution toward a freer society has been costly in one sense. The baby boom of the late 1990s and the first decade of the twenty-first century produced many two- and three-children families that pushed the population of China past the 1.5 billion mark in 2008. China's very considerable economic growth has been offset by this increase in population, and the per capita GNP has risen only modestly. More significant from the point of view of defense policy is that feeding, housing, and clothing 1.5 billion Chinese takes up most of the nation's energy. The Chinese military remains quite large and China is clearly an important regional power, but it has not been able to catch up with the United States and Japan in technological capability. Further, military training remains generally second rate, largely because of a lack of funds for operations, maintenance, and a rigorous training regimen. As in the past, many Chinese soldiers spend at least half their time and effort planting, nurturing, and harvesting food for themselves and their fellow soldiers.

Changes in the United States

The two most significant pieces of legislation of the first decade of the twenty-first century were the passage of a value-added tax law and a law mandating that no passenger automobile powered by petroleum products would be built in or imported to the United States after the year 2014. The value-added tax, which is now at 7 percent, was quite helpful in solving the chronic budget deficit that had plagued our country since the early 1980s. In retrospect, this law—in combination with the line-

item veto and the 30-cent federal tax on gasoline—renewed the confidence of the world's financial centers in the health of the American economy and helped stabilize the dollar at 100 yen and 1.50 deutsche marks.

Breakthroughs in solar-cell technology (the Japanese hold the key patents), heavy pressures from environmental groups, and a few terribly hot summers all played a role in getting congressional approval of the radical legislation on private automobiles. Most of us already have at least one electric car, and many of us have a solar car. Nevertheless, much oil is available because world consumption has been decreasing in recent years and because better technology helped locate additional sources of petroleum throughout the world prior to the passage of the automobile law.

The population of the United States has passed 300 million. The relaxing of restrictions on immigration in the early 1990s to alleviate a shortage of workers in the United States seems to have paid off, in that the quality of immigrants in the past 20 years has been higher than in any comparable period. Moreover, the flow of talented young people from Korea, Japan, Taiwan, India, and especially China has contributed significantly to our ability to make scientific progress over the past two decades. The impressive work ethic of these immigrants has inspired many Americans to increase their own intensity and productivity.

Thirty percent of US businesses, real estate, banks, private universities, and nonprofit corporations is now owned and operated by the Dutch, British, Germans, Japanese, Koreans, and others. Their managerial talents, combined with the entrepreneurial skills of Americans, have helped sustain the growth of the American economy at an average of 3 percent per year— somewhat higher than the 2.5 percent growth of the first nine decades of the twentieth century. Hence, the American economy remains the largest in the world, with the Japanese a close second and all

other nations considerably behind. The Soviet Union, for instance, has slipped to fifth place.

Changing Military Realities
of the New Century

Changing threats as well as changing economic and political realities have made planning and programming even more challenging than in the past. Justifying a large US military budget each year since the turn of the century has been quite difficult since the Soviet Union, mired down with internal problems, is perceived as a nuclearly armed Ottoman Empire—more to be pitied than feared. The US defense budget has slipped below 4.5 percent of the GNP, and the size of the active duty military is down to 1.5 million and still declining. Enlightened military and civilian leaders in DOD, aware of changing threats, have correctly decided to reduce force structure in order to maintain excellent training, a decent pay and benefits program, and a stable retirement system—the incentives required to recruit and maintain a highly motivated and professional military force. Further, the military services have shifted a greater portion of the defense budget to research and development in order to compete in the super-high-tech arena. And the most delicate exercise of all has been to carry out a vigorous arms competition with high-tech countries that remain our friends and allies.

The Maturation of
Compartmentalized Systems

Systems resulting from compartmentalized programs that were initiated in the 1980s and 1990s are now deployed in considerable numbers by operational commands. Most of these black (clandestine) programs emerged from the US Air Force. That service's experience in dealing with various compartmentalized programs (many in the space and surveillance arenas) in the 1960s and 1970s facilitated its development of so many black programs in the 1980s and 1990s. There has been a greater willingness to be doctrinally innovative in these black programs than in white (open) ones. For instance, compared to the white programs of the 1980s and 1990s, the commitment to manned systems in black programs has been markedly reduced.

Conceptual Developments

In the past 20 years, some important conceptual and doctrinal developments have changed the military services and their interaction with each other considerably. A key ingredient of this doctrinal evolution has been the role of the Joint Staff in the development of joint doctrine as well as the greatly enhanced power of the chairman and vice-chairman of the Joint Chiefs of Staff. Only now can we judge the revolutionary impact of the Goldwater-Nichols Law of 1986. For example, military reformers have attained many of their goals: each service academy cadet and midshipman spends a full semester at another academy, each new flag officer spends a full year at the restructured National War College, and each commander in chief in the field is a product of the Joint Staff system. Clearly, the relationship between military services is more harmonious than it was from 1946 to 1986. The services are showing a willingness to work cooperatively and to develop joint doctrine that will serve the greater good of the nation.

In particular, the Air Force has become more important in some areas of warfare

and less important in others. In the late 1980s, both the National Defense University Press and Pergamon Brassey's published *The Air Campaign* by Col John Warden. This book had a considerable impact on the thinking of leaders from all the military services as well as on civilian leaders in DOD. Warden argued that air superiority would be the primary combat mission in the AirLand Battle of the future, pointing out many examples of the primacy of this mission from the history of warfare. Additionally, a series of analytical histories of air combat began to appear, and by the early 1990s the US Air Force, for the first time, began to develop an intellectual base firmly grounded on historical, wartime experiences. The use of experience in combat as a proving ground for the development of doctrine and theories of war—something that is so well understood by leaders from other services—began to become part of Air Force methodology by the mid-1990s. Although acceptance of Warden's concepts was difficult for all of the military services, it is quite well established in the year 2010. Developments in technology and the evolution in doctrine have placed air power in the forefront as far as conventional warfare is concerned. However, space and naval systems now dominate the nuclear arena, and highly trained soldiers and marines dominate the low-intensity arena.

Shifting Imperatives of Strategy

Returning to the late 1980s and the era of the Bush administration, we need to reexamine the various elements of national power in light of present-day realities and the challenges and opportunities of the future. Economics has finally forced its way to the top of the national agenda, and the new president must subordinate all other issues to getting our national economy in order and solving the problem of our trade deficit.

This focus on the economy will be traumatic for many military people who correctly see national security as our most important priority but who incorrectly see it in narrow terms. National security is not just guns, ships, and aircraft to meet a well-established military threat; it is also a robust national economy. In order to bring the national budget into near balance, the military will have to take some budgetary cuts well beyond those that Frank Carlucci mandated. Those people who argue that we must build our military solely in response to military threats are misinformed and fail to serve the nation. The "threat" is becoming more and more an economic one, and the stakes—our national sovereignty—are enormous. Aggressive divestiture of obsolescent systems, organizations, doctrines, and tactics—as well as the cancellation of one or more major procurement programs—will be necessary between now and the mid-1990s, or we will have a very "hollow" military. A historical parallel may be in order. President Jimmy Carter's cancellation of the B-1 in 1977 was a blessing in disguise, for it allowed the Air Force—in a time of great budgetary austerity—to buy the fighter and attack aircraft that it so badly needed to shore up its conventional capability.

The second major imperative for the future is clearly technology, but not just military technology. We must find incentives to dramatically increase innovation in civilian technology so that we can compete with the aggressive technologists in other nations. The most important of these civilian technologies is in the area of energy production. We must take aggressive steps, including tax incentives and seed money, to pursue opportunities in superconductivity and solar energy. A somewhat less important technology that we must pursue just as aggressively involves waste disposal and pollution control. If the United States can make breakthroughs in these two related areas, the world will beat a path to its door. For example, the Corning Glass Works of Corning, New York, makes ce-

ramic filters for catalytic converters in automobiles. Corning is the only company in the world that makes this device, and now that nations around the world are passing laws that make pollution-control devices mandatory, Corning sales are booming. So, for all the right environmental reasons as well as the great opportunity for export sales, we should hotly pursue these technologies.

Budget-based national strategy can be a dangerous approach because it can weaken us appreciably; however, national security planning and programming based almost exclusively on expectations of military threats can bankrupt the United States. What is the answer? Fundamentally, we must reassess our national strategy. We must reduce our formal and informal commitments throughout the world, gradually but systemically bringing a sizable number of troops home unless the host nation is willing to pay much more of the costs of having them on its soil. We must seriously reexamine our quasi-alliances and slowly reduce the burden of these arrangements.[2] We must begin and sustain a serious and systematic divestiture to rid ourselves of the "coast artillery cannons" as soon as possible. (To use the coast artillery analogy, we should have divested ourselves of that mission and equipment in 1925, when it was clear that aircraft carriers would be the primary capital ships of the future rather than in 1942, when we finally made a concerted effort to close down the 16-inch gun units throughout our nation and our territories.) We must open up all of our compartmentalized programs to divestiture teams so that they will be playing with a full deck of cards. (An examination of the divestitures—in the early 1980s—of the Titan missile, the B-52Ds, and the mid-Canada radar line may give the divestiture

teams some useful ideas on how to plan for and implement creative divestiture.) We must look for innovative ways to fund programs, including having the Japanese, Germans, and Koreans underwrite some of our major programs, such as the one involving the C-17. We could propose a buy-lease arrangement whereby foreign sponsors fund the procurement program and the United States agrees to lease the airplanes from those sponsors. After 25 years, the sponsors could take over the airplanes, or the United States could extend the lease. Granted, this is a radical approach, but there are many advantages to this type of arrangement.

In 1941, even though the world was in flames, we did not have the force structure, the training, the alert posture, or the intelligence coverage to deal with the surprise attack at Pearl Harbor. But we did have a long-term grand strategy and military strategy that served us well once we entered the war. Thanks to such visionary leaders as Gens George Marshall and Henry "Hap" Arnold, we were able to identify and analyze our enemies, establish strategic priorities for Europe, and create the necessary war plans, logistics support plans, and procurement programs.

Today the situation is largely reversed. We have the training, intelligence resources, force structure, and alert posture that were sadly lacking that Sunday morning in 1941. But we do not have the long-term strategy and plans that will serve as beacons for our decisionmakers. In the late 1930s and early 1940s, we had the time (and, more important, took the time) to think, plan, and make decisions based on these plans. We must return to this pattern of careful, long-range planning and strategy making. We need to identify, nurture, promote, and take full advantage of the George Marshalls in our midst.[3]

Notes

1 This article is a small part of my efforts to plan seriously for the future, including a series of books on future warfare—currently in the process of commissioning. I invite anyone who would like to join me in charting our future national interests to contact me directly.

2. Terry L. Deibel's "Hidden Commitments," *Foreign Policy*,

no. 67 (Summer 1987): 46–63, is highly recommended reading.

3. At the end of my books and papers, I usually make a number of specific recommendations to readers who would like to pursue the issues I raise. For those of you interested in long-range planning, I suggest a number of things. First, join the World Future Society (a subscription to *Futurist* magazine comes with this membership), and try to attend the upcoming conference "Futureview: The 1990s and Beyond" from 16 to 20 July 1989 at the Sheraton Washington Hotel, Washington, D.C. Second, read a few books and articles on long-range planning, such as the following: George A. Steiner, *Strategic Planning: What Every Manager Must Know* (New York: Free Press, 1979); Noel Capon, John U. Farley, and James M. Hulbert, *Corporate Strategic Planning* (New York: Columbia University Press, 1987); Perry Smith et al., *Creating Strategic Vision: Long Range Planning for National Security* (Washington, D.C.: National Defense University Press, 1987); and Richard Cohen and Peter Wilson, "Toward a National Security Strategy for the 1990s: Assuring 21st Century Competitiveness," in press (*Comparative Strategy*). Third, watch the excellent television series "Nova." Fourth, buy a personal computer, some sophisticated software, a modem, and use them all—often. Fifth, identify, support, nurture, and listen to the innovators in your organization. Sixth, hold brainstorming sessions on a regular basis, and follow carefully the basic rules of brainstorming: there are no bad ideas in a brainstorming session, the wilder the idea the better, and the more ideas the merrier. Seventh, when you or your organization is about to make an important decision, be sure to consider the long-term implications of that decision. All of us should be interested in the future, for that is where we will spend the rest of our lives. Americans have the unique opportunity to frame that future. What a shame it will be if we fail to do so.   □

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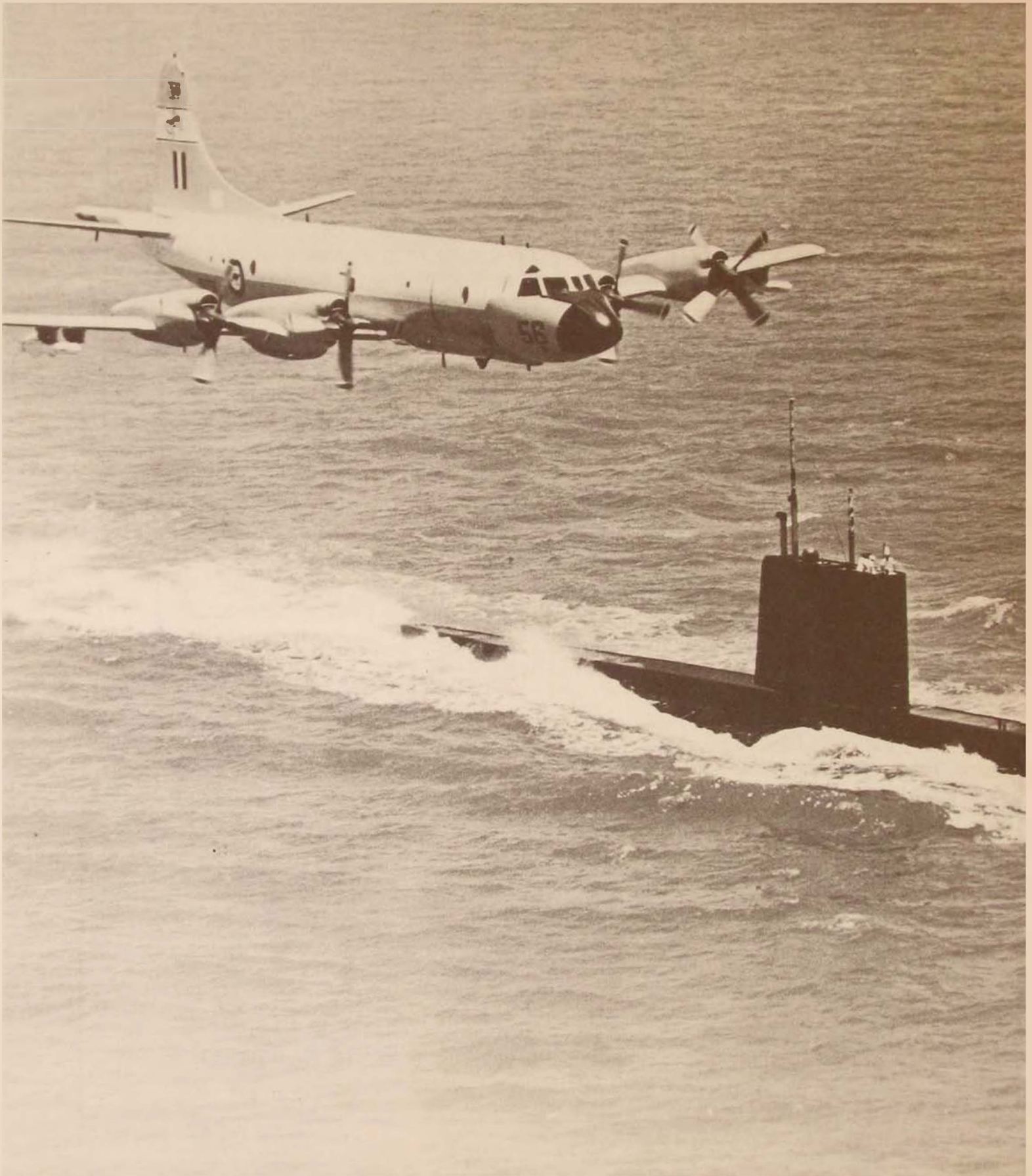
THE RAAF WRITES ITS DOCTRINE

Wing Comdr David J. Schubert, RAAF
Wing Comdr Brian L. Kavanagh, RAAF

We find ourselves constantly in a dilemma as to whether too much detail has been presented or whether we have become so terse that the meaning [of doctrine] is clouded and darkness descends upon the reader . . .

IN a reference to doctrine and the writing of doctrine, US Air Force Gen William W. Momyer—then a colonel—once wrote, "'We find ourselves constantly in a dilemma as to whether too much detail has been presented or whether we have become so terse that the meaning [of doctrine] is clouded and darkness descends upon the reader.'"[1] Even a casual

discussion of doctrine causes some people to shudder, others to expound at length on the many different views of its meaning, and the remainder to sink slowly and interminably into the darkness that Momyer refers to. The mention of doctrine within the Royal Australian Air Force (RAAF) will elicit, at best, confusion, and, at worst, looks of derision. In the words of the indomitable Professor Julius Sumner Miller, "Why is it so?"[2]

A Borrowed Doctrine

The straightforward answer is that, in the past, the RAAF has not perceived a need for an Australian doctrine. That is, Australia's earlier "forward defence" policy allowed the RAAF to adopt, wholesale, the air force doctrines of "big league" sponsors such as the United Kingdom (UK) and the United States. This luxury has, at the same time, proved an impediment to the independent development of strategic thought on air power in Australia. RAAF doctrine, therefore, has been the doctrine of other nations—neither directed specifically at Australia nor influenced significantly by members of its air force. In short, few members of the RAAF have thought about doctrine; of those who have, even fewer have contemplated it in an Australian context.

An example of borrowed doctrine was the British Royal Air Force (RAF) Air Publication (AP) 1300, *Operations*. This manual had a significant influence on the RAAF until a major shift in UK strategic strike defence policy in the 1960s rendered much of it obsolete. Until that time, con-

cepts used in Australia—such as "the balanced air force"—were derived from this useful manual, once considered the unofficial bible of air operations in the RAAF.

Times have changed. Major shifts in world politics—the US Guam doctrine of 1969 and the emergence of regional economic and national powers, to name just two—have altered Australia's strategic circumstances. Because Australia's national strategies and defence policies have changed, old reliances are now irrelevant, and the absence of a specifically Australian doctrine is becoming apparent. The RAAF can no longer rely on the doctrinal precepts of larger, broader-based air forces that support fundamentally different national policies and military strategies. Their doctrines are at times outdated, but—more important—they are inappropriate to Australian conditions. Moreover, looking to other air forces for direction in the use of air power in future hostilities is contrary to the fundamental principles of Australia's recently adopted defence policy of self-reliance.

There is another, more important, philosophical reason why an increasingly self-reliant fighting force should have its own unique, formalised doctrine. Unless a fighting force has a definitive doctrinal statement of how it is going to fight in war, it has no explicit and absolute basis on which to focus its strategy and planning. Of equal importance, without a doctrine that fosters broad-based understanding, a fighting force lacks those shared assumptions among commanders and subordinates that enable them to know intuitively what each is likely to do under the pressures of combat. Doctrine, if it is sound, is the means of reducing the fog and friction of war and is the foundation of all successful military enterprises.

Doctrine—The Holy Writ?

Contrary to popular folklore, doctrine is neither some kind of codified law enunci-

AUSTRALIA'S REGIONAL SECURITY INTERESTS

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- 500 -   Nautical miles from Darwin
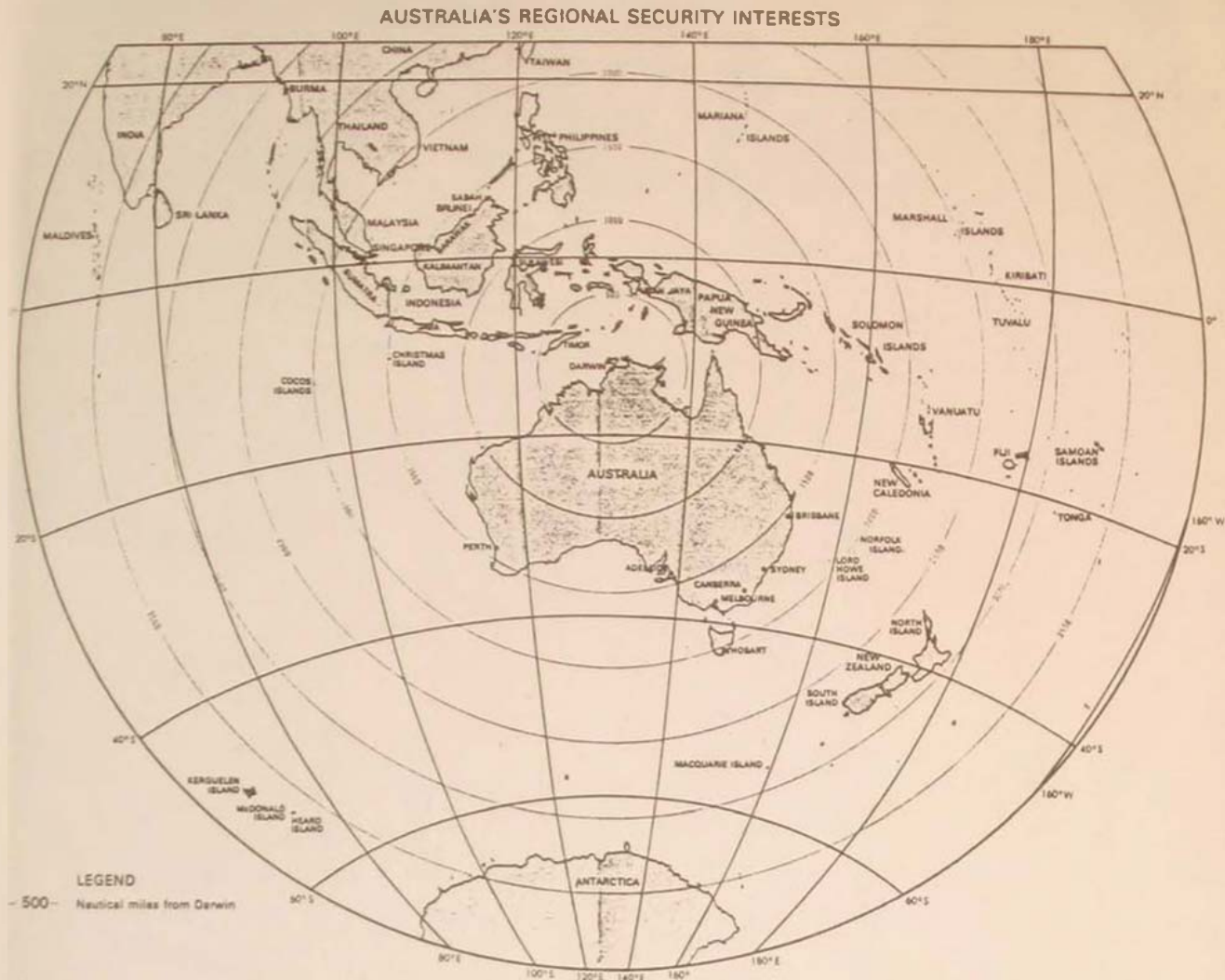
Australia is an island nation with a vast area of national interests. Air assets are increasingly important as the new Australian defence policy emphasizes coverage of the enormous geographical distances over which potential threats could emanate.

ating immutable rules on how to fight war, nor a dusty book of commandments kept in an old trunk in a deep, dark cellar, guarded by monks and brought out only for Kangaroo Exercise washups. These myths suggest something sacrosanct—that is to say, unchanging and unchallengeable. This is not

doctrine but dogma. The rigidity of dogma inevitably leads to failure, as history and experience show. Military operations do not aim to fail, so dogma has no place in their domain.

Military doctrine is a body of central beliefs about war that guides the application of power in combat. Although authoritative, it is only a guide and requires judgment in its use. Doctrine is derived from a synergy of two sources: fundamental principles and innovative ideas about the best use of combat power. Fundamental principles draw on experience and are time-honoured as the optimum way to succeed. They are the guidelines that have worked best in the past. Conversely, inno-

vative ideas look only to the future and include theoretical as well as practical application. Fundamental principles evolve slowly and are, by nature, relatively permanent, whereas innovation embraces continuous change. The overall interaction of these two elements, therefore, makes military doctrine a particularly dynamic process bounded only by the limits of our imagination.

Air Power Doctrine

Having defined doctrine generally, as it applies to any combat power, we must now give air power doctrine a more specific focus. First, we should consider what air power is. The widely recognised definition by R. A. Mason and M. J. Armitage in *Airpower in the Nuclear Age* proclaims air power as "the ability to project military

Australia has traditionally looked to Great Britain and the United States for both aircraft (clockwise from left: RAAF C-130, F-111, and F-18 aircraft) and for its doctrine. The Australians now perceive their national defence requirements as significantly different from those of its traditional partners, requiring a careful examination and development of air doctrine specifically designed to meet Australian needs.

force by or from a platform in the third dimension above the surface of the earth."[3] Thus, air power doctrine can be described as the central beliefs about the conduct of war that guide air services in the application of military power within this third dimension.

Second, we must note that air power doctrine is neither restricted to air war nor confined solely to air forces. Air power doctrine concerns itself with the best use of air services to exploit the intrinsic qualities of air power in the achievement of national objectives. The characteristics of air power, including its advantages and limitations, must be conveyed within the context and form of future warfare. Although air power doctrine may logically be based on past events and established in the present, its prime concern is with the future. Lord Arthur W. Tedder, marshal of the RAF and an exponent of air power, encapsulated the concepts of doctrine when he stated, "We must look *forward from* the past . . . not *back* to the past."[4]

The Shaping of Air Power Doctrine in Australia

Let us take Lord Tedder's advice and dwell for a moment on the historical events that have shaped air power doctrine, both globally and nationally. In this way we will have a better understanding of where RAAF doctrine is today and where it should go.

Throughout the relatively short history of air power, there have been few opportunities for the development of air power doctrine. Specifically, the efficacy of air power doctrine was harmed by some overearnest, politically motivated proponents of air power who actively sought the independence of air forces. Further, some people emphasised air power's traditional responsibility to support land and maritime forces, often to the detriment of the devel-

opment of operations exclusively within the air. Air power can be applied in support of other combat forces; it can also be applied independently. Both applications are vital to a nation's security, yet history suggests that the latter has received a disproportionate emphasis in the past.

An unrelated but parallel development has been the change in attitude toward warfare since the end of World War II. The idea of global confrontation, either conventional or nuclear, was the driving force behind Western military doctrine immediately after World War II and for the next 20 years. This concept has steadily given way to greater emphasis on limited warfare. For political or military reasons, modern warfare now seeks limited objectives rather than the total victory of the past, and conflicts may take the form of counterinsurgency, guerrilla warfare, or counterterrorism. The invasion of Grenada and the raid on Libya are examples of the modern use of combat force and are described in today's warfare lexicon by the phrases *low-intensity conflict* or (in Australia's case) *escalated low-level conflict*. These changes in attitude toward warfare over the four decades since World War II have had a major impact on the application of air power.

Technology, too, has had an effect on the application of air power. Because it has improved the performance of military equipment, the number of weapons and weapon systems within military inventories has decreased—but not without corresponding and dramatic rises in costs. Also, the cost of training and retaining personnel has increased, relative to the past. In short, past capabilities can now be matched with fewer resources, but rising costs and diminishing numbers of assets are matters of concern within a modern military force.

There is no doubt that the RAAF today is a high-technology force, but it is still a small force with a decreasing inventory and, paradoxically, is subject to increasing demands for air services. This latter point is exemplified in the Royal Australian Na-

vy's (RAN) need for fleet protection following disbandment of the Fleet Air Arm. At the same time, strategic guidance from the 1987 defence white paper emphasises how the newly adopted Australian defence policy of self-reliance and defence in depth "gives priority to the air and sea defences in our area of direct military interest."[5] Furthermore, the rather large geographical area of Australia's direct military interest is unlikely to decrease in the future.

To reiterate, air power in Australia today faces different challenges than those of the past in terms of perceived threats, forms of combat, and tasks. Air power is now responsible for the defence of an enormous area of military interest, using more lethal but more expensive air assets that are gradually decreasing in number. Allocation of these limited assets is now the most significant issue of command and control within the Australian Defence Force (ADF). This last point is controversial because there is increasing pressure to unnecessarily divide Australia's air service among the service components—a concept that defies doctrinal precepts on the best use of air power.

Considerations When Writing Doctrine

Although the theoretical aspects of doctrine are important and necessary, they do not determine whether it will be successful. The practical consideration must be that doctrine is recorded in order that a body of central beliefs be accurately reflected and correctly perceived. The right perspective is an integral part of the revision and refinement that make doctrine a dynamic process. Recording the collective memory of central beliefs enforces a discipline and clarity of thought that help sustain this dynamic process.

As discussed earlier, the relative permanence associated with fundamental principles is the keystone to writing doctrine. When we distill these principles, which chiefly arise from combat experience, they provide an ideal foundation from which to develop air power doctrine. We then meld this foundation with innovative ideas, and the two elements react to form the core or philosophical basis of doctrine. But a working doctrine cannot end there because in this form it is sterile. To be effective for the organization, it must be adjusted to the dominant, influencing factors and realities of the organization.

The realities that directly influence the doctrine of a military organization are the nation's defence policy, geography, and geostrategic perspectives. An offensive national defence posture, for example, would engender a far different military doctrine than would a posture that is intrinsically defensive. Similarly, a doctrine for protecting an island nation with a vast area of national interest and regional influence must be different from that of a small, landlocked country with hostile neighbors. Other influences, such as economics and threat assessment, add to the equation, but they shape defence policies and geostrategic perspectives rather than directly influence military doctrine.

The influence of force structure—or the current, existing force—must be considered in writing air power doctrine. No military organization starts from a clean slate, because existing conditions are already part of the central body of beliefs. Once doctrine is written, based on the present organization, force structure should then be subject to the guidance of the doctrine rather than vice versa.

One might use a still to represent the complexities and dynamics of a viable, continuous doctrine (see figure). The container is both the framework of a nation and its perspectives on warfighting. The fluid to be distilled—a mix of national defence policy and national geostrategic perspectives—is both activated and fed by a "yeast" containing the core elements of fundamental principles and innovative ideas, both theoretical and practical. This core is alive, volatile, and capable of crys-
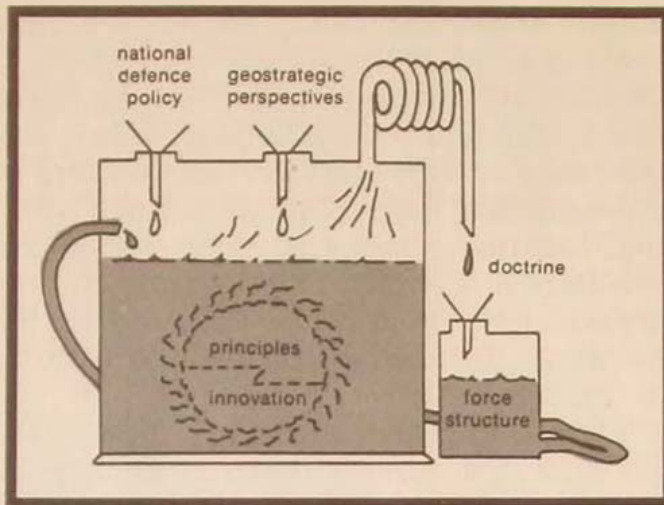
The Doctrine Still

tallization or precipitation, depending on the state of the solution. The distilled product is doctrine, which slowly reacts with a force-structure solution, thus changing the force structure over time. Eventually, the modified force structure feeds back, maturing and mellowing the original distillation process.

This analogy shows the interactions of various dynamic elements and stresses that we should view the development of doctrine as if it were an ongoing chemical reaction or a continuum. That is, the process of distilling doctrine is perennial; the end product, after all, is a body of thought. Similarly, although the distillation process may operate without all the ingredients, the end product may not be the best available. In Australia's case, defence self-reliance has changed the content of the ingredients, and now there is a need to critically examine the quality of the yeast used previously. Given the changed ingredients, the most appropriate yeast, and the continuing chemical reaction, the best doctrinal distillate will flow as a matter of course.

Relevance of Doctrine to the RAAF

How is all this doctrinal moonshine relevant to the RAAF, and what does it have to do with aeroplanes? Perhaps the best way to begin to answer these questions is to determine what we in the RAAF believe a doctrine should achieve and why we think we need to formalise our doctrine.

Surely an organization the size of the RAAF,* which shares responsibility for the security of the nation, should have a common set of assumptions, ideas, values, and attitudes as a guide to its future actions. Furthermore, all members—from the initial trainee through the operational aircrew to the highest-ranking leader—should share an understanding of how air power can best be applied in an Australian context. We can achieve that aim by documenting our understanding. Once recorded, central beliefs provide a common baseline for education and the dissemination of collective thought. Should nothing else be accomplished, recording a doctrine is at least a common starting point from which to educate RAAF personnel.

Further, a recognised, accepted, and duly recorded doctrine will provide a common framework for planning within the RAAF and will influence its future force structure. Thus, establishment of a doctrinal framework gives direction to force structure and to development of the most appropriate strategies. From these strategies evolve the operational art and, at the unit level, the best tactics for using resources. Once again, doctrine is only a guide and merely directs. It is not a panacea, but a particular, necessary part of the planning process.

Viewed simplistically, planning can be likened to developing a playing field. That is, the Australian National Defence Policy dictates the range of games to be played. Doctrine corresponds to selecting and clearing a patch in the wilderness, leveling the ground, and growing the grass. Long-range planning assures that the correct lines are drawn on the ground and the appropriate goalposts are erected. Team leaders and members can then determine

the best strategies, operational art, and tactics to play the game. There is nothing to prevent a team from working out its plays in advance, provided these plays are for the range of games dictated. However, playing the game involves more than strategies and tactics, and the outcome may not be satisfactory, particularly if the game has to be played in the wilderness.

So, in answer to the skeptics, doctrine has much to do with the RAAF and is not just about flying aeroplanes. It gives all RAAF personnel a common understanding of why the service exists and how air power can best be used to protect the nation. As a guide, doctrine encourages the best employment and support of aircraft at every level of planning. Furthermore, it directly affects the RAAF's air power capabilities and the selection of future aircraft and weapon systems.

Why a Single-Service Doctrine?

Most military commanders in Australia recognise that the ADF is at present firmly committed to joint operations and that its future defence commitments will most likely be joint in nature. Why, then, should the RAAF write a dedicated, single-service doctrine in a joint-service environment? In the context of military operations, jointness denotes two or more independent services functioning in their own operational environments—whether land, sea, or air—under a single point of command to meet a common aim. Although command is centralised, each service still functions in its unique realm. Further, each one strives to complement the combat powers of the other two by exploiting its own combat power within its operating medium.

As long as ships ply the seas, tanks roll over the ground, and aircraft take to the skies, there will be fundamental differences between the three arms of the defence force. For example, their force structures,

for the most part, will remain separate because of basic differences in equipment and operating conditions. Second, the peculiarities of the land, sea, and air will demand different skills, applications, and tactical thinking of the people who operate in these environments; consequently, training requirements will continue to differ. Third, and most important, each service's role will remain aligned with its environmental dimension and in many cases can be carried out as a single-service task rather than a joint-service task.

Jointness, therefore, does not necessarily imply integration of the three armed services. Neither does it mandate a reduction in the roles of these services. The differences between land, sea, and air as operating media are too vast to permit an amalgamation of their essential functions, and the applications of land, sea, or air power cannot simply be lumped together for economic or technical expediency. Perhaps such consolidation may be feasible if and when we build a military vehicle that is capable of operating across the full spectrum of the world's operating environments, including space. Until then, for the sake of overall defence efficiency, some support functions can either be joint endeavors or assigned to one service. But, as long as functional divisions remain, single services will always carry out specialised roles and tasks unique to their own operating environments.

Justification of single-service doctrine would not be necessary if its critics viewed jointness from a historical perspective. In 1942, during the North Africa campaign of World War II, Field Marshal Bernard L. Montgomery and Air Marshal Arthur Coningham created the allied tactical air force and introduced AirLand Battle doctrine. They showed that the quintessence of jointness in an AirLand Battle is cooperation—in this case, between land and air forces and among allied nations. Without cooperation, all the joint doctrine and procedures in the world will not bring together three organizations as disparate as the fighting

arms of a nation. With cooperation, however, jointness will triumph with even a modicum of preordination.

Unfortunately, this perspective of jointness is nonexistent. Jointness builds a momentum of its own, almost as an end in itself rather than a means to an end. It tends to de-emphasise the need for single services yet avoids full-fledged integration of the services. And, all too often, initiatives that are in the "interests of jointness" are considered sacrosanct. To challenge them borders on heresy. Perhaps we need to rigorously question some joint initiatives, particularly those that may reduce a service's capacity to operate effectively within its own medium. Perhaps we need to engender a sense of cooperation among the services that will pave the way for joint operations in war, rather than manufacture an artificial construct that compromises individual performance.

The Way Ahead

Where, then, does RAAF doctrine go from here? If, as stated, single-service doctrine is still necessary and written doctrine is important, then we must surely write a doctrine suitable for the RAAF. That is precisely what is happening.

The chief of the Air Staff (CAS), Air Marshal Ray Funnell, has taken the initiative and nominated two officers from RAAF Development Division as project officers to develop RAAF doctrine. These two officers (the authors of this article) are tasked directly by CAS and now work in relative isolation at the RAAF Staff College. Their project is to develop a manual of air power doctrine for use within the RAAF and to determine a means by which this recorded doctrine can be continually verified and updated within the organization.
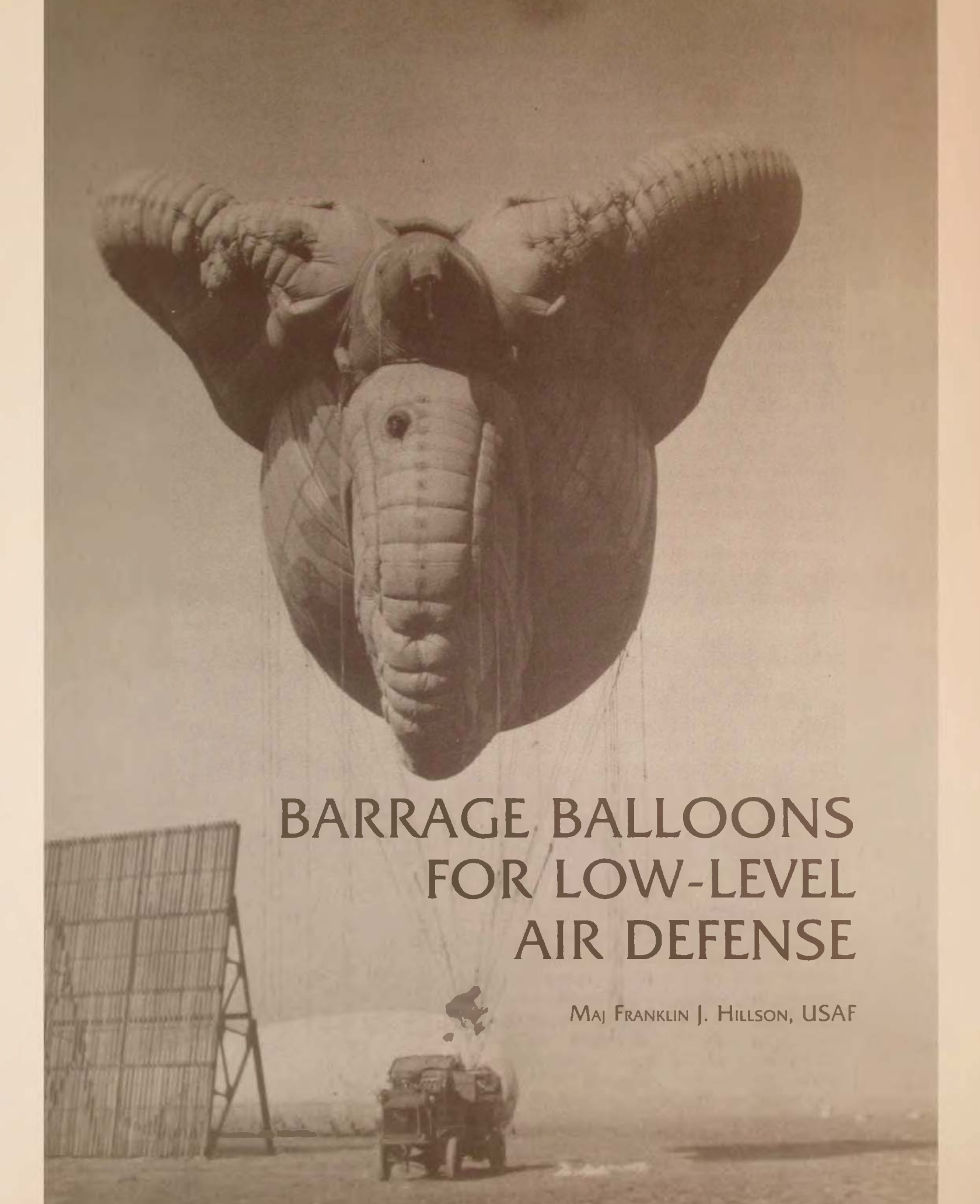
The task is a first for the RAAF; it is also rather onerous because, as General Momyer pointed out, "The writing of manuals is perhaps one of the most difficult tasks in the field of military writing."[6] Yet, the stakes are high. The future of air power is vital to Australia. The RAAF has a compelling responsibility to enlighten and align its personnel. Equally, the RAAF has a moral duty to make air power better understood and appreciated within the defence community of Australia. We can accomplish both aims by writing on air doctrine. The alternatives are ignorance, suspicion, misemployment, and inefficiency—characteristics that nestle comfortably under the mantle of General Momyer's darkness.   □

Notes

1. Quoted in Robert Frank Futrell, *Ideas, Concepts, Doctrine: A History of Basic Thinking in the United States Air Force, 1907–1964* (Maxwell AFB, Ala.: Air University, 1971), 197.

2. This phrase is the catchcry of Professor Miller, a well-known academic in Australia who uses simple experiments to explain scientific phenomena to children.

3. M. J. Armitage and R. A. Mason, *Air Power in the Nuclear Age* (Urbana, Ill.: University of Illinois Press, 1983), 2.

4. Lord Arthur W. Tedder, "The Unities of War," in *The Impact of Air Power: National Security and World Politics*, ed. Eugene M. Emme (Princeton, New Jersey: D. Van Nostrand Co., Inc., 1959), 339.

5. *The Defence of Australia, 1987* (Canberra, Australia, Australian Government Publishing Service, 1987), viii.

6. Quoted in Futrell, 196.

BARRAGE BALLOONS
FOR LOW-LEVEL
AIR DEFENSE

MAJ FRANKLIN J. HILLSON, USAF

THE United States and its NATO allies would be at a distinct disadvantage during a conventional war in Europe: they lack numbers. They are outnumbered in the air and on the ground. Yes, the debate over quantity versus quality continues, but the vast number of Soviet aircraft and armored vehicles presents a major dilemma to the West. Specifically, NATO faces a large number of Warsaw Pact attack aircraft whose primary objective is the airfield—a target as important to the East to destroy as it is to the West to defend. The West's potent ground-based antiaircraft system—consisting mainly of surface-to-air missiles (SAMs)—can be countered by electronic jamming and especially by low-level flight. In fact, a high-speed, low-level attack at 100 feet or less makes NATO airfields and other vital targets terribly vulnerable.[1] If the West is to improve its defenses against low-level air attack, it needs another element of the air defense team—something that can enhance current antiaircraft weapons while providing an extra measure of protection to crucial areas. That something is the barrage balloon.

Many people remember or have seen pictures of barrage balloons floating majestically in the skies over England in mock peacefulness during World War II. These large, airborne barriers protected important installations in both Great Britain and the United States against low-level air attack. They complemented the existing air defense system and—particularly in England—proved their worth on numerous occasions by helping to thwart low-flying enemy aircraft. Barrage balloons disappeared after World War II as newer, more sophisticated air defense weapons were introduced. The threat from low-flying aircraft, however, continues to be a problem. Aerial barrages still offer a viable deterrent against this form of attack, and we should use them. This article first examines the current low-level threat and the limitations of SAMs. Then, after a brief historical review of balloons in "combat," it discusses the utility of barrage balloons today in helping to protect a vital NATO asset—the airfield.[2]

The Low-Level Threat and SAM Limitations

Modern technology allows aircraft to fly high and fast, but it also permits them to fly at very low altitudes—perhaps their most advantageous capability. Radar, antiaircraft artillery (AAA), and particularly SAMs make today's air defenses extremely formidable, but these systems are vulnerable to ultra-low-level attack by enemy aircraft. Because SAMs and other antiaircraft systems are deadly to high-flying aircraft, both NATO and the Warsaw Pact emphasize low-level attacks. This tactic helps negate the effect of SAMs, decreases enemy response time, and enhances the element of surprise. For example, a MiG-27 can complete a low-level flight from Berlin to Bitburg AB, West Germany, in only 30 minutes.[3] Fast, low-flying strike aircraft present a serious problem to our air defenses, especially in view of the large number of the Warsaw Pact's attack aircraft. Squadron Leader Peter D. John of the Royal Air Force (RAF) elaborates on the low-level threat in his article "Aerial Barrages to Enhance Airfield Defences":

Over the past 20 years, tactical strike/attack aircraft have been designed by the Soviet Union and by western nations to deliver weapons from low-level, where they can achieve surprise and pose most problems to defensive systems. The speed at which such aircraft operate has been steadily increased, as has their capability to fly and drop weapons from progressively lower levels: *speeds of 400 to 500 knots at a height of 100 feet or less* [emphasis added] are now regarded as standard operating parameters. Facing NATO's Central Region, the WP (Warsaw Pact) deploys specialised ground attack squadrons with the range to tackle targets in the UK as well as continental Europe. Flogger D and Fencer are operational in large numbers, and the latter carries terrain-avoidance radar to

Barrage balloons were first used in World War I to deter low-level bombing attacks by German Gotha bombers. The technology of military aircraft has improved significantly since then, but the barrage balloon defense—simple though it may be—remains viable even today.

improve its ultra-low-level capability. These third-generation aircraft . . . pose a considerable threat to the survivability of NATO air forces during a conventional war.[4]

The Falkland Islands War offers a solid example of the effectiveness of high-speed, low-altitude tactics in negating SAMs. The Argentinians put most of their ground-based antiaircraft weapons at Port Stanley and at the nearby airfield. Potentially very dangerous, these defenses consisted of a Roland missile unit, three units of Tigercat missiles, and a good sprinkling of Blowpipe shoulder-launched weapons as well as a collection of 20-mm and 35-mm rapid-fire guns.[5] The area seemed fairly well protected, but the British still believed they could successfully attack this target. Traveling at 550–600 knots, their Sea Harriers flew 50 feet above the ocean, successfully completed the mission, and suffered no losses.[6] During the course of the war, British pilots flew even lower to break radar lock once their radar warning receiver indicated SAM activation. Throughout the entire war, SAMs destroyed only two British aircraft.[7]

Argentine pilots also used these tactics to good effect. When attacking British ships, they flew "so low en route to their targets that salt water drops evaporated on their windshields, obscuring vision."[8] Against ground targets, they hugged the contours of the land to shield them against early warning systems and SAMs. In *Lessons of the South Atlantic War*, Gen Sir Frank King stated that

with one exception, all aircraft which attacked ground forces flew at less than 100 feet, using the ground contours. They were seldom exposed to surveillance radars until at a maximum of four kilometres range and there was often very little warning of their approach. The problem was exacerbated by bad
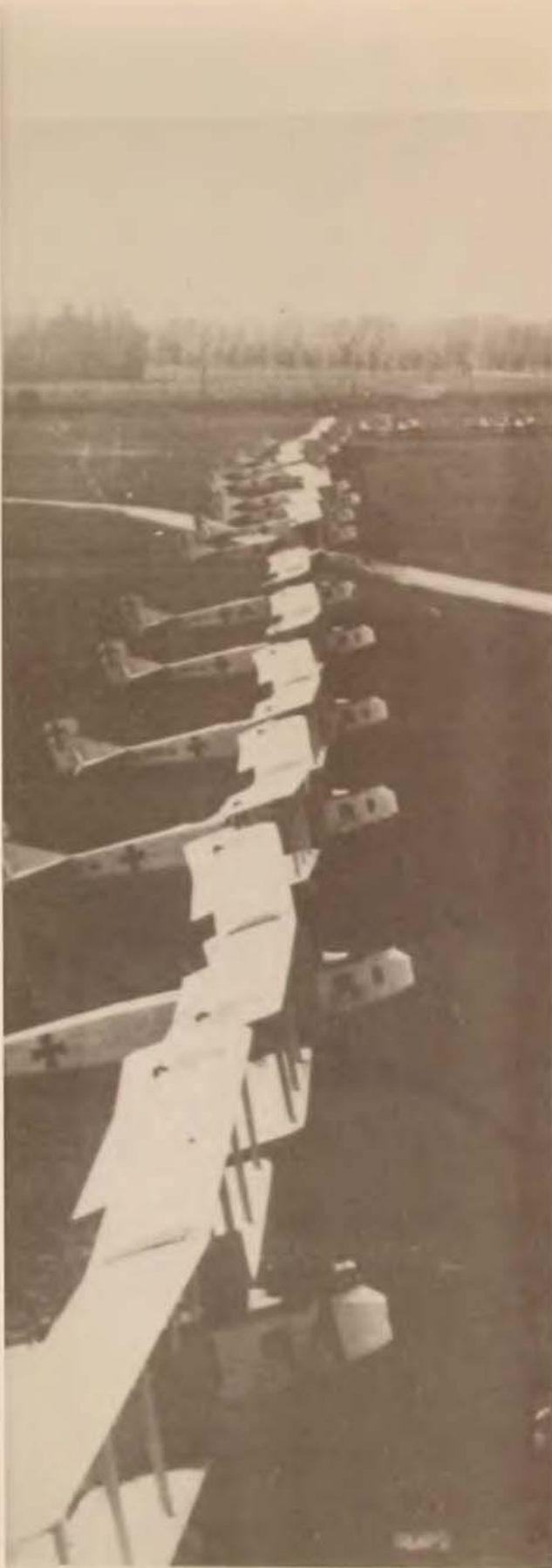
weather, low clouds, mist [and] low light levels in valley bottoms for the last two to three hours of daylight.[9]

The Argentine air force scored some notable victories during the war despite the 400-mile flight from their bases on the mainland, a lack of coordination, defective bombs, and a relatively strong British air defense system.

A good part of the British air defense consisted of Blowpipe shoulder-launched guided missiles, and many people see such portable SAMs as the answer to the low-level threat. Indeed, this lightweight, low-cost weapon offers flexibility of use in battle and is available in large numbers. "Their main missions," according to Christian Poechhacker, a *Defense International Update* writer, "are to ensure the anti-aircraft protection of units and sensitive locations, and to create above the battle zone an airspace so insecure that the chances for survival of low and very low flying aircraft will be extremely small."[10] Unfortunately, this weapon may be overrated for several reasons. First, the user must "eyeball" the target and then align it in the optical sight. Visual conditions, then, are extremely important in acquiring the target. Second, firing time is limited. The Blowpipe operator has approximately 20 seconds to locate, acquire, and engage high-speed, low-flying aircraft.[11] Because the aircraft can travel over three miles in those 20 seconds, it may be out of range by the time the missile is ready to fire. The last disadvantage concerns the small, one-kilogram (kg) warhead, the standard weight for most portable SAMS. Poechhacker points out that

> a 1 kg warhead is not powerful enough to obtain a destructive effect when the missile does not actually hit the target. . . . Experience in recent conflicts has revealed that a large percentage of aircraft hit by missile warheads of about 1 kg have been able to regain their bases. For example, a Super Etendard was able to return to its aircraft carrier after being hit by an SA-7 while supporting French troops in Beirut in 1984. Another lesson with

the same SAM-type was learned in the Yom Kippur War, when almost half of the Israeli A-4 Skyhawks hit by SA-7s returned to base.[12]

Even though the Blowpipe is armed with a 2-kg warhead, a combination of the other factors still caused the British Blowpipe to perform rather poorly during the Falklands war. Of the 100 Blowpipe missiles launched at the enemy, only nine destroyed their targets,[13] and those nine successful strikes claimed only slow, low-flying Pucará ground-attack aircraft and helicopters.[14]

Air defense weapons will improve—witness the excellent Stinger missile—but there is no doubt that low-flying aircraft continue to be extremely difficult to combat. Their performance in the Falkland Islands attests to that fact. Interestingly, the British had a similar problem with low-flying enemy aircraft during World Wars I and II, but they countered this threat by employing a wonderfully simple weapon—the barrage balloon.

The Barrage Balloon Defined and Employed

The barrage balloon was simply a bag of lighter-than-air gas attached to a steel cable anchored to the ground. The balloon could be raised or lowered to the desired altitude by means of a winch. Its purpose was ingenuous: to deny low-level airspace to enemy aircraft. This simple mission provided three major benefits: (1) it forced aircraft to higher altitudes, thereby decreasing surprise and bombing accuracy; (2) it enhanced ground-based air defenses and the ability of fighters to acquire targets,

Many people's image of barrage balloons comes from World War II scenes such as this. These balloons significantly reduced the number of attacks on Allied ports. In fact, when the Germans determined that the damage done to the Allies did not justify losses caused by barrage balloons, they halted those attacks.

since intruding aircraft were limited in altitudes and direction; and (3) the cable presented a definite mental and material hazard to pilots.[15] Many people think that a barrage balloon system was designed to snare aircraft like a spider web capturing unwary flies. Not so. Any airplanes caught in these aerial nets were a bonus; the real objective of the balloons was to deny low-altitude flight to the enemy. Mindful of these capabilities, the British saw the barrage balloon as a viable means to counter

At the beginning of World War II, nearly 300 balloons of various types, including this D-3 (below), were available. Orders had been placed for 2,400 more.
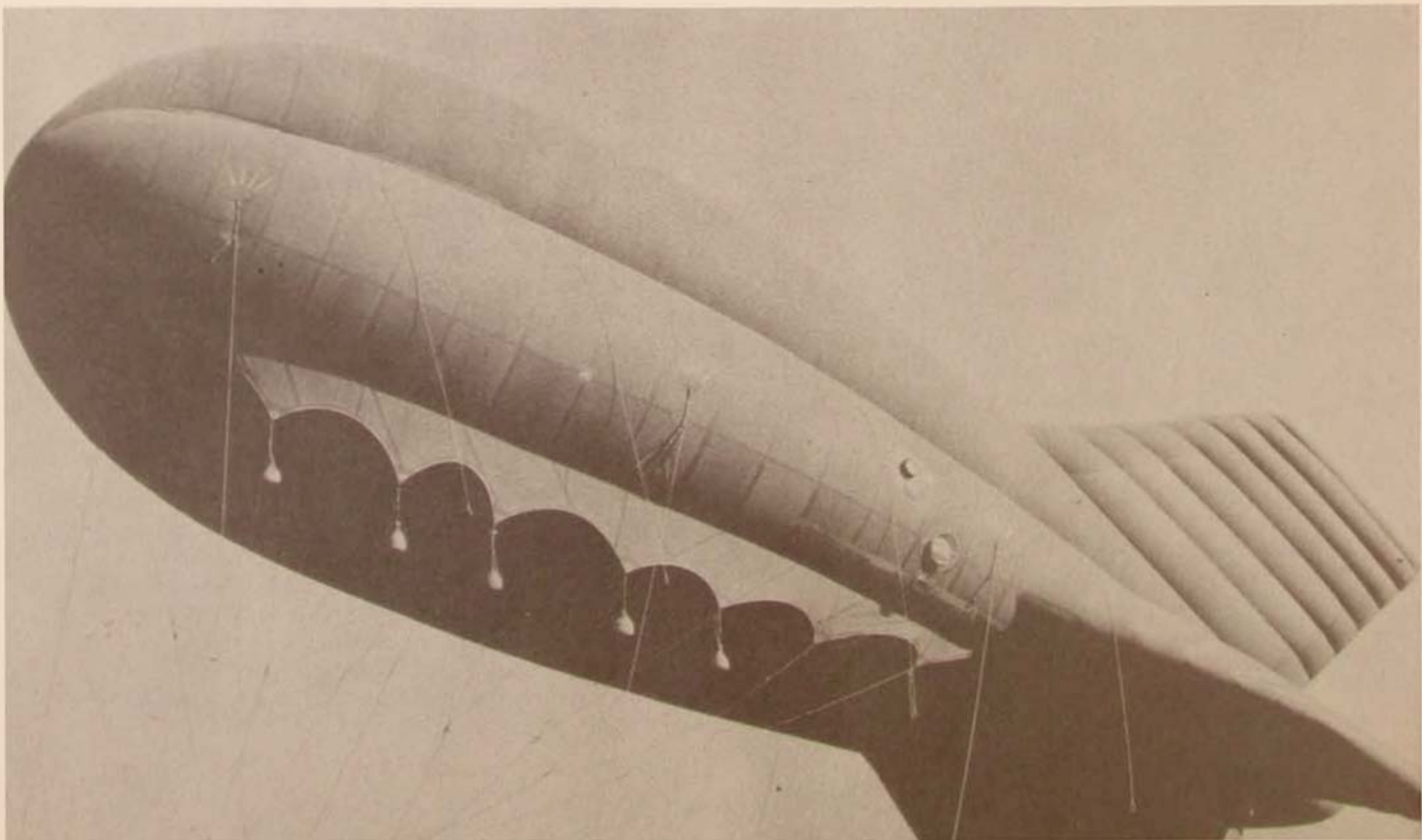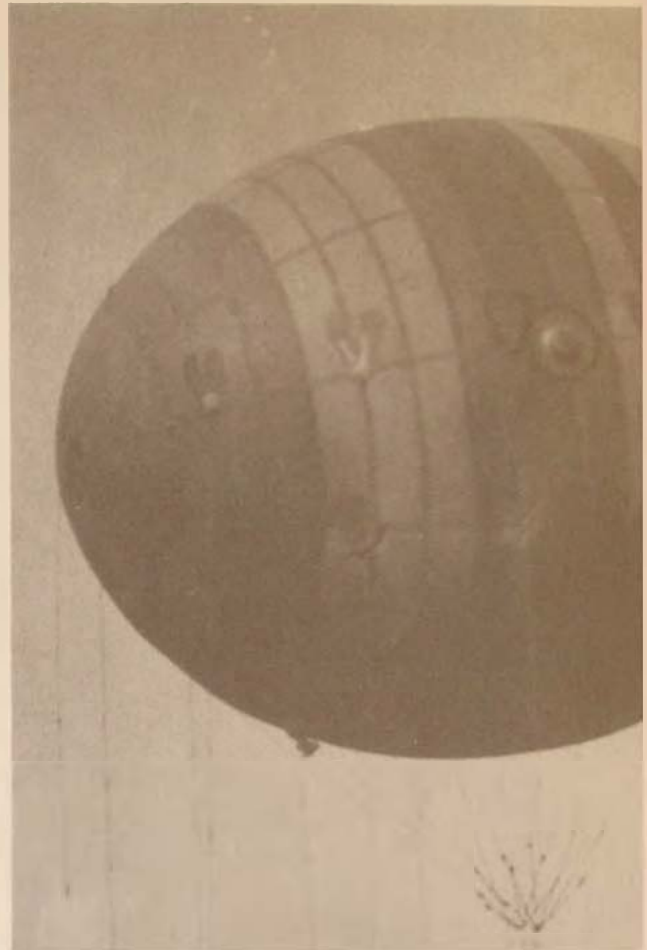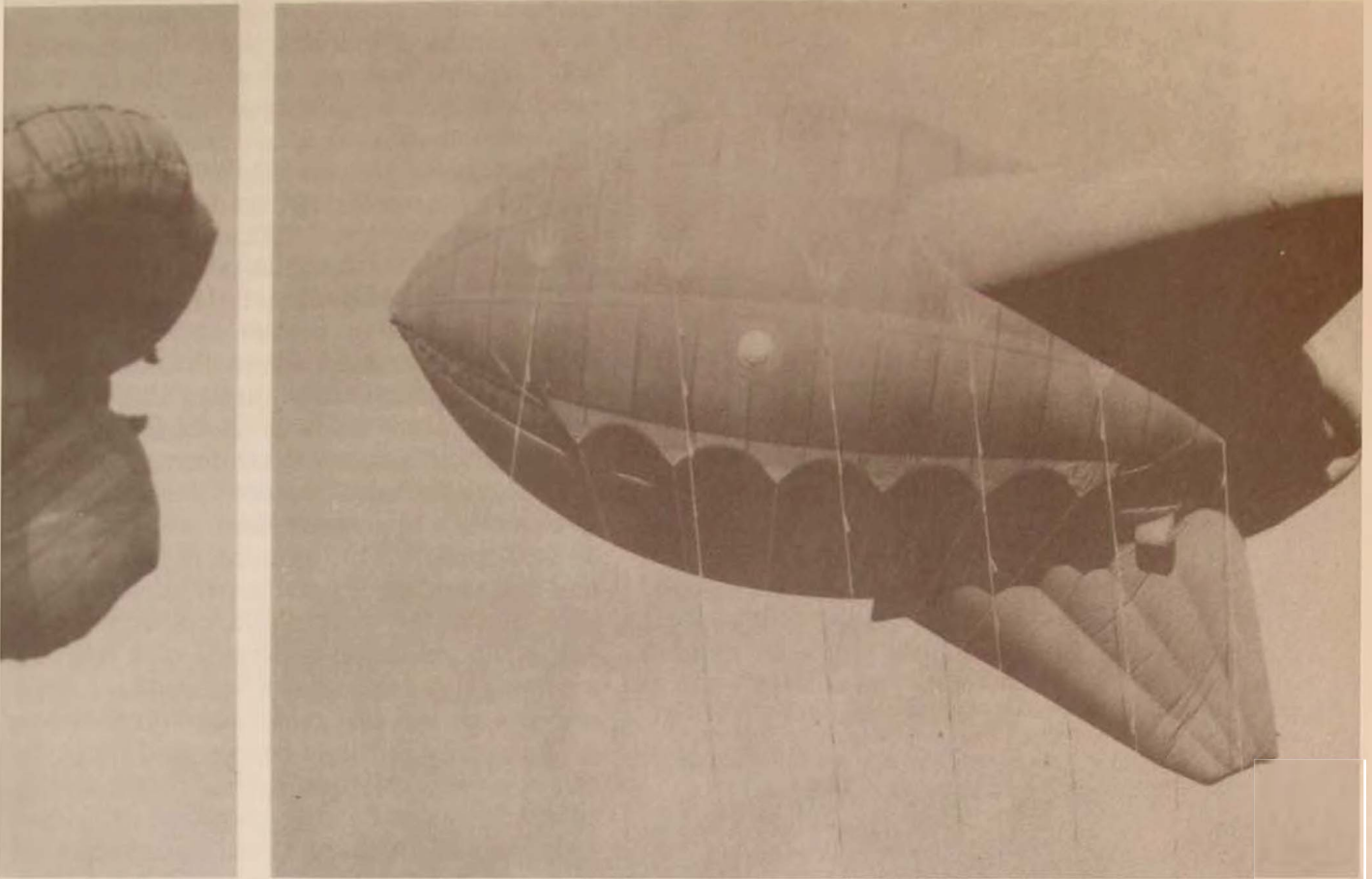
low-level attackers during the world wars.

During the last years of World War I, the British employed the barrage balloon in response to attacks by German Gotha bombers on London. Called an "apron," the barrage consisted of three balloons 500 yards apart joined together by a heavy steel cable.[16] These balloons had an operational height of 7,000 to 10,000 feet, and by June 1918 10 apron barrages shielded the northern and eastern approaches to the capital.[17] Although there is no record of these balloons ever directly bringing down an enemy aircraft, they did permit British fighters and AAA to concentrate their efforts in a smaller expanse of airspace (above 10,000 feet), and they prevented the Gothas from flying low. The Germans themselves thought the barriers were very effective. Gen Ernst Wilhelm von Hoeppner, the commanding general of the German air force in World War I, received a report stating that the balloons made attacks very difficult and would make future raids on London virtually impossible if balloon defenses continued to improve.[18] In fact, an increase of 3,000 feet in the operational height of the barrage balloons would have effectively stopped German heavier-than-air bombardment of London since the Gotha's combat altitude was only 13,000 feet.[19] Maj Gen Edward B. Ashmore, the London air defense area commander, valued the barrage balloon system and the services of its 3,587 personnel.[20] Although the barrage balloon flew for only a year in England during World War I, it was a fully integrated component of the British air defense system and performed its important mission very well.

The success of the barrage balloon in the First World War paved the way for its use in
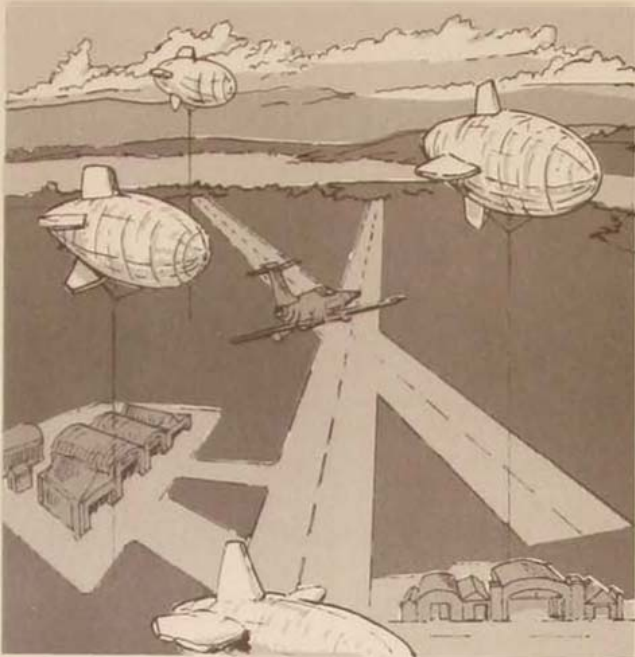
The Skynet is a modern barrage balloon designed to rise to 3,000 feet within four minutes. When used with antiaircraft weapons, balloons can channel attacking aircraft away from the target and into defensive weapons. Skynet can remain on station for up to two weeks.

the Second. This time, however, instead of a mere handful, thousands of balloons dotted the British skies. Again, the balloons provided a partial solution in countering fast, low-flying German bombers and fighters and in protecting key installations. The British belief in an integrated air defense system meant using every viable air defense weapon for self-protection—a combination that included the principal means of fighters, antiaircraft artillery, and balloons. The only modification in balloon usage from World War I concerned the apron concept. Instead, single balloons were used because they could be sent aloft more quickly and were easier to operate. Thus, in 1936 with war clouds darkening the horizons, the Committee of Imperial Defense authorized an initial barrage of 450 balloons for the protection of London.[21]

With the capital securely covered, barrage balloons also flew at fleet anchorages and harbors in threatened areas. Although airfields also requested them during the early months of the war, the balloons were not available because of slow production and losses due to combat and bad weather. However, thanks to a new balloon plant, the barrage system had 2,368 balloons by the end of August 1940 and would maintain approximately 2,000 operational balloons until the end of the war.[22]

These numbers demonstrate the extent to which the British valued their balloons. They even formed Balloon Command, an independent command under the leadership of Air Marshal Sir E. Leslie Gossage, to control the 52 operational barrage balloon squadrons stationed across Great Britain.[23] Eventually, this command consisted of 33,000 men.[24] The amount of equipment and the number of personnel, however, tell only part of the story. Performance in combat is the principal indicator of a weapon system's success, and the balloons received a thorough test during World War II.

During the Battle of Britain and throughout the war, balloons proved their worth, time and again. Besides protecting strategic cities and ports, barrage balloons mounted in boats defended estuaries against minelaying aircraft. A declassified wartime report assessed their performance: "Following the aerial sowing of mechanical mines, the reallocation of various units of the balloon barrage system to places like the Thames Estuary, and certain other channels, has resulted in effectively reducing the aerial mine sowing operations of the German Air Force."[25] Barrage balloon cables also successfully frustrated German attempts to achieve surprise, low-level penetration at Dover.

The Dover incident deserves elaboration because it provided, in the words of Air Marshal Gossage, "a clear indication of their [the Germans'] respect for the British balloon barrage."[26] In an attempt to clear the balloons from Dover, the Germans launched a major effort in late August 1940. They destroyed 40 balloons but lost six aircraft in the process. Much to the Germans' chagrin, 34 new balloons appeared

the very next day. Air Marshal Gossage commented on the action: "The protective balloons still fly over Dover. The attack on the barrage has proved too costly. . . . In general, major attacks on balloon barrages have ceased, the enemy having realised that the game is not worth the candle. The fact, however, that he hoped to destroy our balloons is in itself proof of the utility of the barrage."[27] During the height of the blitz, 102 aircraft struck cables, resulting in 66 crashes or forced landings.[28]

After the Battle of Britain, balloons continued to prove their effectiveness in combat. Because of heavy losses during the day, the Germans switched to night attacks. Defensive night fighters were still in their

The Stinger surface-to-air missile proved its value in the Afghanistan War. Nonetheless, low-flying aircraft remain extremely difficult to shoot down. Barrage balloons provide an inexpensive way to enhance defenses for high-value targets.

rudimentary stages of development, so guns and balloons had to do most of the work against German bombers. Even after advances in night-fighter technology, it was the opinion of London that "balloons and guns were still essential, not so much to bring the enemy down as to keep him up so that point blank bombing was impossible."[29] Two examples illustrate London's sentiments. First, a recently installed aerial barrage at Norwich surprised the Germans and diffused their bombardment by forcing them to attack above 8,000 feet.[30] Second, the barrage balloons at Harwich saved that city from an attack by 17 bombers because the Germans went after their secondary target at Ipswich-Felixstowe, a place not protected by balloons.[31] Overall, balloons lessened the severity of night raids on England by deterring point-blank bombing. Incidentally, they also had some tangible results in February and March of 1941, in that seven enemy aircraft crashed after

striking cables in various parts of Great Britain.[32]

Even though German aerial activity over England gradually decreased, British balloon activity did not. Balloon Command units accompanied troops in North Africa and Italy, where they protected beachheads against low-level attack. Four thousand balloon personnel even took part in the invasion of Normandy, crossing the channel on D-day to protect artificial harbors, captured ports, and ammunition dumps of the Allies.[33] But perhaps the best example of "balloons in combat" occurred during the V-1 offensive against London in 1944. Once again, balloons were an integral part of the air defense system and, in this case, formed the third and last line of defense against this low-flying weapon. Approximately 1,750 balloons from all over Great Britain were amassed around London, forming what one British officer called "the largest balloon curtain in history."[34] Although guns and fighters destroyed most of the V-1 bombs (1,878 and 1,846, respectively), balloons were credited with 231 "kills."[35] Basically, that was the last hurrah for British barrage balloons, and as the war gradually wound down in 1945, so too were the balloons of Balloon Command.

Great Britain was not the only country interested in aerial barriers. Many Americans would be surprised to know that the United States had its own extensive barrage balloon defense during the early part of World War II. In fact, many areas of the West Coast had "balloon curtains" protecting cities, factories, and harbors. By August 1942 approximately 430 balloons defended important areas in California, Oregon, and Washington against low-level attack.[36] Several balloon units were also sent overseas into combat. In late 1943, for example, Army balloon batteries deployed to the fighting in the Mediterranean.

The North African campaign covered a fairly large front, and, as expected, many areas lacked sufficient air defenses. Balloons provided protection to several important ports, effectively enhancing the existing antiaircraft defenses. For example, in August 1943 the air defense region protecting Oran, Algeria, "requested 60 balloons for its sector in order to discourage torpedo, dive bombing, and low level bombing attacks."[37] By October 1943 three American barrage balloon batteries (each with 45 balloons) operated in various ports in North Africa and Italy.[38] When the port of Naples was captured, a battery of balloons operated there as part of the overall protection of that harbor from air attack. Naples was crucial to Allied operations in Italy: "Among [Mediterranean] ports Naples was the most important in the Allied line of communications; during January 1944 the port handled more tonnage than any other port in the world with the exception of New York."[39] Although it was close to the German lines and received many air attacks, Naples had a solid air defense system and suffered only slight damage. A Fifth Army antiaircraft officer stated that a good port defense consisted of several elements, including an ample number of barrage balloons.[40] The *AAF Air Defense Activities in the Mediterranean* summarized balloon operations in that theater: "Although American barrage balloons were not of primary importance in the Allied air defense system, they were undoubtedly valuable as a supplementary device to fighter aircraft and AA."[41]

Barrage Balloons: Their Applicability Today

British and American experiences with barrage balloons reveal two major facts: (1) the low-level air threat is a continuing problem, and (2) barrage balloons can aid in countering that threat. Therefore, it is rather surprising that aerial barrages are not mentioned in the history books. Balloons would be just as useful today as they were in the forties and would effectively complement the SAMs, rapid-fire AA guns, and fighters of the modern air defense system. Based on the performance of barrage bal-

loons during World War II—when they successfully defended ports and factories from low-level attack—it seems logical to employ aerial barriers today to protect one of NATO's most important installations—the airfield. The Soviets fear the aerial might of the United States and its allies and will do everything possible to destroy it quickly and completely. Therefore, a massive low-level attack on NATO air bases, which many have called the Achilles' heel of air power, is a certainty. These targets deserve extra protection, and barrage balloons offer that capability. As mentioned earlier, the barrage balloon offers several distinct advantages that have been proven in wartime: it denies the low altitude to enemy aircraft, enhances air defense systems, and presents a definite mental and material hazard to the enemy pilot.

Strategically placed, balloons can easily and effectively deny low altitudes to the attacker. Three locations warrant balloon protection. One would be the suspected ingress routes located some distance away from the airfield.[42] Valleys, mountain passes, rivers, and canals are only a few sites where barrage balloons could be effectively placed at altitudes ranging from 300 to 1,000 feet. Next, some balloons could be placed closer to the air base in small, irregular groupings. Peter D. John states that "a staggered pair of lines, or small groups of randomly positioned balloons, would provide a better obstacle than a single line of closely-spaced balloons."[43] Experience confirms his observation: balloons placed at irregular intervals and altitudes are effective barriers, whereas an orderly arrangement of rows of balloons at uniform altitude is easy to outflank or overfly. Finally, other balloons could be positioned throughout the air base itself. Since the Warsaw Pact lacks large numbers of stand-off weapons, their aircraft must overfly the target to deliver their bombs.[44] All three balloon emplacements should prove disruptive to attackers, forcing their aircraft higher and denying them the safety and surprise of low altitude.

With the attacking aircraft forced higher, the balloons then provide almost simultaneous force enhancement. Active air defense personnel receive early warning and ready their weapons, taking advantage of the fact that balloon positions and altitudes are known. SAMs and other weapons will be only partially effective in the ultra-low, almost supersonic melee over the airfields. An aircraft forced higher is an aircraft closer to destruction. In addition, the balloon obstacles would divert the flyers' attention from their targets, causing them to either inaccurately bomb their objectives or to reattack.[45] Another attack, of course, increases the probability of acquisition and destruction by a SAM.

Possibly the most ominous aspect of the barrage balloon—at least in the mind of the attacking pilot—is the physical and psychological hazard the cable presents to him and his aircraft. During World War II, aerial cables did in fact destroy aircraft, and the threat of hitting a cable was nerve-racking. In *Berlin Diary* William L. Shirer wrote of a German pilot who, during the night bombing of London, always dropped his bombs too high because he feared the barrage balloons at lower altitudes.[46] Allied pilots felt the same way about cables according to a declassified World War II intelligence bulletin: "In 1940, the RAF was encountering an increasing number of barrage balloons over their bombing objective in western and northwestern Germany, and these balloons were a major cause of worry to RAF pilots."[47] An American pilot echoed the same feelings in another declassified report:

Unknown balloon cables are a very considerable mental hazard, regardless of anyone's ideas to the contrary. The undersigned had the opportunity to fly a Hurricane [sic] II out of a balloon-defended factory field last week, and in spite of having a corridor cleared by lowering one balloon, the mental reaction against all the remaining cables was distracting. Later on, during the same journey, when bad weather was encountered near Birmingham, the same cable worry was present. It is

not believed that hostile aircraft will knowingly come down within close range of a balloon barrage.[48]

Aerial barriers are also cheap and durable. Wallop Industries of Great Britain has developed a balloon called the Skysnare,[49] and a barrage of six costs approximately $18,000. Maintenance and training are equally inexpensive, and the only "fuel" for the system would be the helium or hydrogen gas to lift the balloon.[50] Considering the price tag of modern weapon systems and ammunition, the cost-effectiveness of the balloon is impressive. Furthermore, the balloon is just as durable as it is affordable. Consisting of a cable, a single-ply plastic envelope, and a winch, the system is extremely robust and can remain airborne for up to two weeks per inflation.[51] The 4-mm Kevlar cable gives the Skysnare system extraordinary strength and destructive power should an aircraft strike the cable.[52]

The advantages of the barrage balloon are many, but—as with any weapon system—there are drawbacks. First, it is susceptible to high winds: during the Battle of Britain, a heavy gale destroyed or damaged approximately 250 balloons.[53] A similar mishap occurred in the United States in 1942 when 57 balloons broke loose in a storm and caused substantial damage to the Seattle area.[54] In each case the balloons were flying at operational altitudes. Subsequently, American balloons were simply hauled in when storms approached. In Great Britain, however, they were only lowered because the threat of German aircraft was still too great to bed them down completely. Timely weather reports could help solve this problem. A second disadvantage of balloons is the fact that their very presence signals the enemy that a target must be nearby. This drawback was partially corrected in World War II by camouflaging both balloon and "balloon bed." Moreover, the balloon was hidden in the clouds with only the near-invisible cable showing. (The typically overcast European theater, then, is an ex-cellent environment for balloons.) Certainly, the balloons would be exposed on clear days, but their deterrent value more than compensates for this drawback. Last, balloon cables are indiscriminately hazardous—friendly aircraft may inadvertently be caught in them. However, Peter D. John suggests using "procedural control" to reduce the chance of a friendly aircraft's hitting a cable.[55] This method worked very well during World War II when hundreds of friendly planes safely negotiated aerial barriers.

Conclusion

In our search to build a better mousetrap, we often neglect the lessons of history. Technology has produced a marvel of engineering in the modern fighter plane, enabling it to fly higher, faster, and lower than ever before. In battle, the jet fighter's forte is high-speed, low-level attack—a tactic difficult to combat. Even weapons such as highly advanced SAMs have trouble defending against low-level attacks, as demonstrated in the Falkland Islands War. More technology always seems to be the answer, but a simple solution to the low-level threat is the barrage balloon.

Barrage balloons were developed in World War I to counter one of the most advanced technological threats of the time—the airplane. The Gotha bomber, which raided the countryside of southeastern England from 1917 to 1918, represented the apex of German aircraft engineering skill. But this airplane was effectively denied direct and low-level access to the target by a balloon and a wire. Although English balloons destroyed no enemy aircraft, they hindered German pilots by confining them to altitudes above 10,000 feet. Consequently, antiaircraft guns and fighters could more easily engage enemy planes flying at the higher altitudes.

Balloons gained even more prominence during World War II and performed well in

combat. That the British used over 2,000 balloons manned by 33,000 personnel demonstrated their faith in the capabilities of the system. The United States shared this confidence. During the war, nearly 430 balloons protected the West Coast. Furthermore, several US Army balloon units saw "combat" in North Africa, providing effective protection against low-level attack on captured ports.

The barrage balloon disappeared after World War II, but this capable asset deserves to be used again. Naturally suited to defend small, important areas, barrage balloons would be perfect for NATO's vital airfields. Here, balloons can offer both tangible and intangible benefits. Expertly positioned, they provide a real hazard to enemy aircraft, forcing them up or around into awaiting SAMs. Chances of surprise attack and low-level approach are reduced. The intangible benefit concerns the presence of the balloon itself. It makes the enemy think twice about trying to destroy a balloon-protected target. Barrage balloons

are not a cure-all, but they can enhance existing air defense systems. Col R. E. Turley, an American advocate of barrage balloons during World War II, emphasized the team approach to air defense in an article written in 1942:

> When employed alone, barrage balloons ordinarily would not be effective. . . . In conjunction with other arms, barrage balloons constitute an element in the antiaircraft defense system complementary to antiaircraft artillery and pursuit aviation, the balloons being most effective at low altitudes where the complementary arms are least efficient. If maintained at effective strength in spite of losses of balloons from storms . . . and enemy action, barrage balloons constitute a dependable and ever ready defense against low-flying aircraft.[56]

Simply stated: barrage balloons optimize air defenses.

While technology changes, some things remain the same. Just as a balloon and a wire could deter a Gotha over London 71 years ago, so can they deter a Soviet Fencer over Bitburg in the future.   □

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HOLD, WITHDRAW, OR ADVANCE

The Role of Tactical Airlift in the Equation

Brig Gen Billy M. Knowles, Sr., USAF, Retired

ARE we fully prepared to prosecute a major war by effectively integrating *combined* (i.e., multinational) forces? We say we are. On the one hand, we regularly tally allied air, ground, and naval forces; we array these forces by sector and region for quick response; and we design command structures for integrated employment. On the other hand, some Americans regularly criticize certain NATO partners for devoting too little to their own defense, and the resolve of some allied leaders may vacillate from time to time. This question of readiness, therefore, is neither irrelevant nor off the wall. After all, in 1940 France capitulated in just 41 days even though their forces, combined with those of Great Britain, were equal to or

tor was an open letter from Gen Robert D. Russ, commander of Tactical Air Command (COMTAC), to his commanders reiterating the tactical air force's (TAF) commitment to providing battlefield air interdiction (BAI), close air support (CAS), and offensive counterair (OCA) for the Army. Essentially, General Russ stated, "We fly and fight to further the joint forces commanders' objectives. . . . Everything that TACAIR does directly supports the airland battlefield. . . . Our commitment to the 1946 agreement to support the Army remains chipped in granite."[1] This should be welcome news for those who are suspicious of COMTAC's acceptance of AirLand Battle as the core doctrine for large-scale conventional war. If these attitudes are genuine, the proof will be manifested through joint exercise scenarios that are free of interservice barriers and artificialities that have thus far served as excuses for improper employment or misuse of air power and for Army recalcitrance. Let's see if the National Training Center (NTC) begins to integrate air and ground forces properly.

As if these weighty concerns were not enough, what about integrating *composite* forces in war? I use the term *composite* to

mean the integrated use of multiple disciplines of one service (a narrower concept of *combined* and *joint* arms). Specifically, is the TAF trained and prepared to provide massive en route and objective area protection to intratheater tactical airlift that is directly supporting engaged ground forces? I think not. I, along with others, have written about the many laments of a frustrated tactical airlift community.[2] Those writings identified five basic concerns of intratheater tactical airlift:

1. The Air Force and Army must recommit themselves to tactical airlift as an ingredient of air power that is essential to AirLand Battle.

2. The TAF must be trained and prepared to provide massive en route and objective area protection for tactical airlift that is directly supporting the AirLand Battle.

3. No master airlift plan should pay for the C-17 at the expense of intratheater airlift.

4. Tactical airlift must be provided minimum essential defensive systems for the envisioned electronic combat/electronic warfare (EC/EW) threat.

5. Deliberate, dedicated, long-range plans for a successor to the C-130 must be as vigorously pursued as those for any other weapon system.

Two documents address the first two concerns, albeit in broad terms: the Army Training and Doctrine Command's (TRADOC) draft publication entitled *Joint Suppression of Enemy Air Defenses* (J-SEAD), 14 March 1988, and the Military Airlift Command (MAC)-TRADOC Airlift Concepts and Requirements Agency (ACRA) draft publication entitled *Joint Airlift for Combat Operations* (JACO), 14 December 1987. It remains to be seen whether these documents' acknowledgment of the first two concerns will ever be incorporated into joint execution planning and exercise scenarios, thereby resulting in tactics development. As stated in a Soviet adage, "One of the serious problems in planning against American doctrine is that the Americans do

It took a decade of major effort to bring the B-1B on line. The same kind of support may be necessary to fund replacement aircraft for the Air Force's aging fleet of C-130s.

not read their manuals nor do they feel any obligations to follow their doctrine."

As regards the third concern, we should not be surprised if the theater commanders in chief (CINCs) inject themselves into any planned diminution of tactical airlift resources. We should expect the commander of European Command (CINCEUR) to be concerned about plans to draw down intratheater airlift assets. The CINC's requirements must be considered when the services develop or adjust force structure.

That was the intent of congressionally directed reorganization (reform).

The Air Staff, Headquarters MAC, the Air Force Reserve, and the Air National Guard are all addressing the need for defensive systems, the fourth concern. We are evaluating a number of off-the-shelf defensive systems. Existing technical problems appear to be manageable, and it is highly probable that electronic defensive equipment will be operational on tactical airlift aircraft in the near term.

At this stage, the fifth concern—a successor to the C-130—is no more than a twinkle in the eye. Maintaining the sincere resolve necessary to obtain this aircraft can be difficult in the face of shrinking defense budgets. It takes commitment of a high order to see a B-1, B-2, advanced tactical

fighter (ATF), or C-17 reach fruition, and this proposal demands no less determination. Certainly, proponents of AirLand Battle should be strong advocates of this initiative.

But this paper principally addresses the first two concerns, without which the other three serve as Band-Aids. A hypothetical scenario involving AirLand Battle and maneuver warfare will best illustrate our purpose. The setting is Europe (whether or not base-case execution ever occurs), with a forward edge of the battle area (FEBA) and forward line of own troops (FLOT) stretching some 1,000 to 1,500 miles from the southern region to northern flank extremes. Warsaw Pact (WP) and NATO forces are arrayed from one end to the other.

One of the players on this stage, the Soviet Union, has indicated that it will attack our rear echelons prior to the first engagement of forward deployed forces. Before any border assault, KGB agents in

Modern warfare requires airlift support, as would be provided by these proposed C-17 aircraft. In turn, airlift requires air defense support—an area for which we may not be fully prepared.

the West would be ordered to assassinate key political and military figures. The Soviets would also insert Spetsnaz teams deep into the West to eliminate command and control facilities, disrupt lines of communications, and create as much confusion and panic as possible. These forces are specially organized and trained to destroy missile storage sites, communications and resupply lines, and air base facilities (the two latter targets are especially important to our scenario). Each Soviet frontal army contains a Spetsnaz brigade consisting of 900 to 1,200 troops that can break off into as many as 135 separate groups.

Once frontal forces are engaged, Soviet doctrine calls for air assault units to attack our second echelon. These WP forces are basically heliborne air cavalry units designed to attack tactical targets and bases that are 30 to 60 miles in front of WP main forces but to the near rear of our own main forces. Still another force that will threaten the NATO rear is the operational maneuver group (OMG), a highly mobile, division-sized force organic to first-echelon formations, whose sole function is to exploit any gaps created at the front by the first-echelon forces. Once the OMG has penetrated, it

can create havoc operating 30 to 300 miles to our rear.

If all of these concepts are implemented throughout the length and breadth of an elongated FEBA, and since there is such a low density of in-place NATO forces, how will we respond? We certainly cannot allow WP armies to pour through a ruptured FEBA/FLOT. That is their AirLand Battle plan and maneuver strategy. Ours is to hold back the thundering herd, attack the enemy rear echelons, and stack them up before they can be brought to bear at the front. How do we identify and simplify the possible courses of action for our ground forces that directly affect *joint* and *composite* response by the Air Force, particularly intratheater tactical airlift? Well, with all the challenges in store for our armies, they might *hold* their ground, *withdraw*, or *advance*.

Let's say that they *hold*. Such an intense action expends mountains of materiel and incurs heavy casualties. Wherever this occurs, throughout the entire theater, the engaged frontal forces must be sustained, resupplied, and reinforced. Our forces plan to use an inordinate Army network of transportation equipment, road-rail-water lines of communications, and rotary-wing aircraft. Under the best or worst of conditions, these logistical accomplishments become turning points of battles, campaigns, and, indeed, wars. The victor performs minor and major logistical miracles by the hour every day. However, if the WP is even partially successful, its forces will be to our rear, disrupting command and control, landlines of communications, air bases, and supply depots. So, if we are to *hold* very long, we will sorely need the versatility, range, and capacity of intratheater tactical airlift daily all up and down that 1,000- to 1,500-mile front.

What if the army cannot hold but must *withdraw* and reposition to fight again? It not only expends and attrits as in the first case but also withdraws—leaving goods of war behind for sound tactical reasons—and must traverse and occupy territory that has been disrupted by enemy actions in our rear area. No matter the difficulty of the task, to become a viable fighting force once again, the army must be resupplied and sustained. Consequently, air lines of communications (ALOCs) and tactical airlift are again part of the total equation.

Hopefully, the advantage somewhere along the FEBA is ours, and our forces *advance*. We break through and attack the enemy's rear echelon. Initially, we expend and attrit and then must move forward quickly and with purpose. Such a maneuver may very well require our forces to travel lighter for speed and leave stores and equipment behind. Since the enemy does not intend to leave lines of communications intact for our advance, we again need tactical airlift to provide resupply, reinforcement, and sustainment.

Regardless of the circumstances, the Army's organic capability, or the relative condition of landlines of communications, engaged ground forces will depend heavily upon Air Force intratheater tactical airlift and ALOCs. All the while, the TAF is equally pressed in battle, providing OCA, BAI, and CAS in direct support of the joint forces commander's overall strategic and tactical objectives. Nevertheless, tactical airlift needs en route, high/low combat air patrol (CAP) and must have a semibenign objective area for airland or airdrop operations, to deliver intact precious reinforcement and resupply, survive, and repeat its essential function.

The Joint Chiefs of Staff (JCS), Air Force, and Army do indeed recognize that ALOCs are indispensable. JCS publications, joint and service doctrine, and designed operational capability (DOC) statements acknowledge the necessity of tactical airlift. Thus, certain persistent mind-sets are all the more vexing: that airlifters had best train themselves in single ship, terrain masking, jinking and juking to avoid threats and show up when propitious; that integral formations of airlift aircraft are not required; that the popular use of A-10s for

en route CAP is effective; that acquiring enough electronic defensive capabilities can offset deficits in *composite* strike packages.

The truth is that resupply and reinforcement airlift operations will frequently call for mass deliveries at specified coordinates during critical time windows, satisfying rates of acceptance dictated solely by ground tactical considerations. Ingress and egress corridors must allow target acquisition. thus requiring en route, fast-flier fighter protection (not A-10s). The objective area must be softened up and reasonably permissive for tactical airlift operations. Self-contained, rearview plastic bubbles and electronic countermeasures do contribute to survivability but are not in themselves panaceas.

The Marine Corps is a suitable example of a *composite* force. Everything about their four divisions and four air wings relates directly to the combat Marine, the "jar head." Their doctrine writers, their developers of manuals and training, their exercise managers, their budgeteers, their acquisitors, their combat support and combat service support people are all devoted to directing their efforts to the point of conflict.

For example, when the Marines execute their equivalent of the AirLand Battle, combat troops are put ashore or deeper inland by amphibious vehicles or helicopters. They are then sustained and reinforced by air-land-rail-water lines of communications. The primary rotary-winged air support is in turn supported by organic KC-130 tankers, and both are protected by dedicated air power. Sea-based firepower, artillery, and armor are augmented by dedicated BAI and CAS. Missile warning systems, radar warning receivers, and chaff/flare dispensers on the Marines' main airlift and tanker craft provide additional self-protection, but the Marines fully understand and intend that their organic fighter force provides primary protection to their airlifters and tankers. The Marines are a *composite* fighting force! We might argue the wisdom of allowing the Marines to maintain a semiautonomous doctrine, but high marks must be awarded their *compositeness*.

Rather than directing the air component commander to execute these unique composite operations for which his tactical air forces are untrained, it would be most wise for MAC and TAC to aggressively create meaningful training opportunities that develop, pretest, and validate effective tactics. Since COMTAC has stepped up to the TAF's recommitment to the Army, can CINCMAC be far behind? That would take care of *jointness*, but what of TAC's and MAC's *composite* responsibilities to one another? Excellent opportunities for *joint* and/or *composite* employment exist through Red Flag. Green Flag. Air Warrior I (NTC), and select JCS-sponsored field-training exercises but not without firm commitment and exercise redesign.

Combined . . . Joint . . . Composite. Careful study of modern principles of war would reinforce the essence of training and preparedness in these three types of combat operations. Yet, intratheater tactical airlift has not been afforded full integration with its combined, joint, and composite partners. That one oversight might very well adversely tip the scale when attempting to *hold, withdraw,* or *advance*.   □

Notes

1 AFRP 190–1. *Air Force Policy Letter for Commanders.* April 1988, 1–2

2. See Brig Gen Billy M. Knowles. "Tactical Airlift," *Airpower Journal.* Fall 1987. 41–47; Col Paul L. Wilke. "Tactical Airlift Tactics and Doctrine: More Carts. More Horses." *Air University Review.* May–June 1986, 21–27; and Maj Ronald G. Boston. "Doctrine by Default: The Historical Origins of Tactical Airlift." *Air University Review.* May–June 1983, 64–75

CLAUSEWITZ FOR BEGINNERS

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S INCE the close of World War II, the study of Clausewitz in the United States—particularly in Army circles—has seen a marked resurgence. The latest version of Field Manual 100–5, *Operations*, is practically oozing Clausewitzian terminology: the concepts of fric-

tion, culminating points, and centers of gravity all see the light of day in a form readily attributable to the Prussian philosopher.[1] Unlike other military theorists, however, Clausewitz set down no hard and fast maxims or principles but invited the reader to explore with him the phenomenon known as war.[2]

The study of Clausewitz, therefore, is not easy. According to Peter Paret, an acknowledged expert on the subject, anyone who "opens *On War* with the expectation of easily separating the valuable kernels of pure gold from the chaff of antiquarian detail will be frustrated."[3] Even distinguished soldiers have had difficulty not only with what Clausewitz had to say but also with the manner in which he said it. Field Marshal Bernard Montgomery is reputed to have stated, "I did make attempts to read the writings of Clausewitz and Jomini . . . but I couldn't understand him [Clausewitz] myself."[4] Bernard Brodie, a prolific writer and theorist on strategic matters, was also attuned to this problem: "The price of admission to the Clausewitzian alternative of intensive rumination [as opposed to merely perusing established formulas] . . . is a commitment to be responsive."[5]

Peter Paret once wrote that attempts to provide what he called the "essential Clausewitz" in the form of excerpts or to represent his theories in outline form have been less than successful and that it was not necessary to "attempt the impossible once again."[6] In accordance with this advice, my purpose here is a modest one. I hope to provide a means by which someone who has received no exposure or only a limited exposure to the works of this philosopher can begin a study of *On War* without being confused by his method or overwhelmed by the voluminous literature available. Toward this end, it is necessary to have a feel for the man, understand some aspects of his theory of war, and appreciate his influence.

Clausewitz was one of a rare breed of soldiers. Not only was he a synthesizer and innovator in matters relating to warfare and its conduct but also he was a practitioner. His career was remarkable both for its longevity (almost 43 years) and for the breadth of its experience. More important, it spanned two remarkably different eras of warfare.

As a young ensign of 12 or 13, he was part of an army that had been brought to the pinnacle of perfection under the tutelage of Frederick the Great for use in what has been termed the age of limited warfare. Armies of this period represented an investment of capital and manpower that monarchs could ill afford to squander in large, set-piece battles. Maneuver in lieu of battle and the use of the military for limited gains had, therefore, come to be the overriding characteristics of warfare during this era. Fourteen years later, in 1806, he was an adjutant of an infantry battalion. In this position, he fought in his "first great Napoleonic battle . . . an experience so shatteringly different from the tedious marches of his boyhood that it was hard for him to comprehend them both belonging to the single activity, war."[7] During the battles of Jena and Auerstedt (in Prussia) and the subsequent pursuit, the Prussian army was virtually destroyed, and Clausewitz was captured. After several months as a prisoner of the French, Clausewitz returned to Prussia and became the personal assistant to Gerhard von Scharnhorst, a senior officer who was deeply involved in the attempt to reform and reconstruct Prussia's army.[8]

This part of his life contained a number of unexpected benefits. His early campaigning in the 1790s included experience in linear warfare and operations against French partisans in the Vosges mountains, giving him knowledge of the "small wars" or "wars of detachments" that most Prussian officers never acquired. Along with this practical education, Clausewitz was exposed to a broad-ranging education in history, literature, and professional subjects due to intensive schooling within his regiment and subsequent time as a student at the War College in Berlin from 1801 to
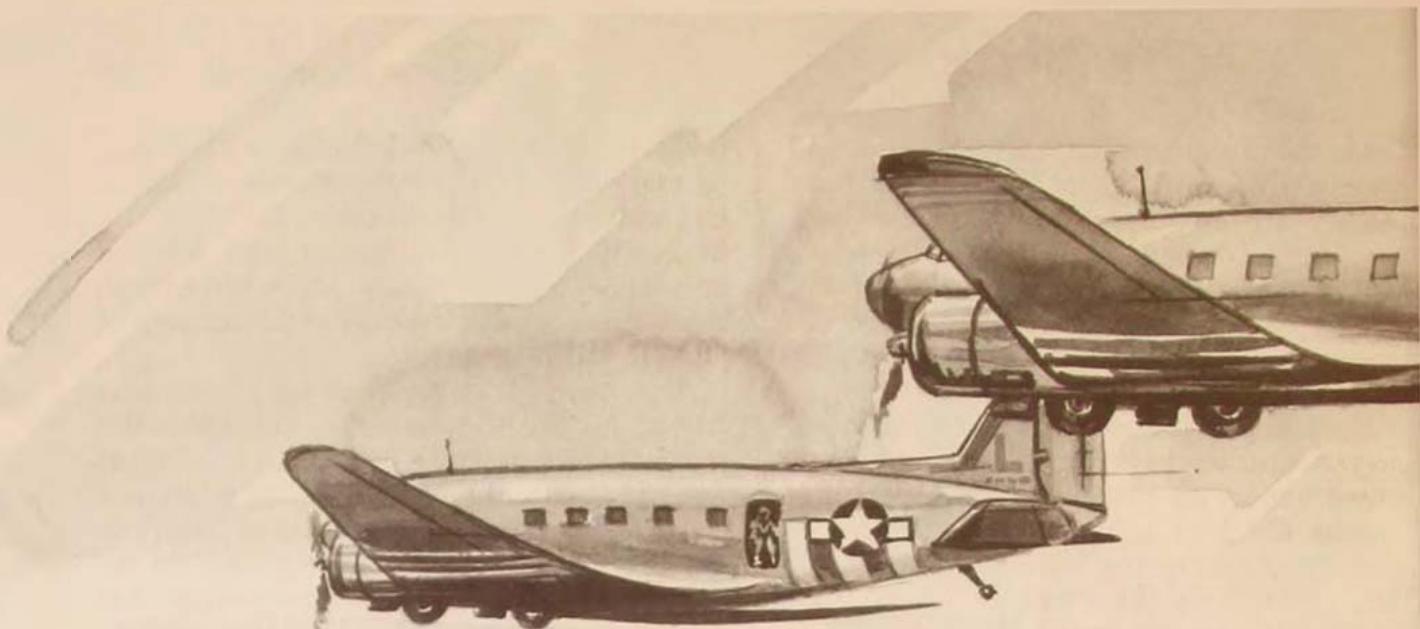
1803. He also began to write and published his first piece, a scathing review of a work on military theory, in 1805. Paret claims that "it would not be inappropriate to regard his writings before 1806 as essentially isolated insights—building blocks for a structure that had not yet been designed."[9]

Clausewitz remained involved in the struggle against Napoléon as a reformer in Prussia but most actively as a staff officer in the Russian army. After the Prussian monarch sided with Napoléon in 1812, many of the reformers—including Clausewitz—sought commissions from the czar. Due apparently to his inability to speak Russian, Clausewitz was relegated to the role of a staff officer. In this position, he was present at the battle of Borodino and the crossing of the Berezina River (both in Russia) in 1812, two scenes of violence and tragedy that were to affect him greatly. He continued to fight with the Russians until 1814 when he was finally readmitted to the Prussian army.[10] During the Waterloo campaign of 1815, Clausewitz once again served as a staff officer. This time he was chief of staff in the Prussian III Corps, the unit that held the attention of Marshal Emmanuel de Grouchy long enough for Napoléon to be defeated at Waterloo by Marshal Gebhard von Blücher and the Duke of Wellington.

Subsequently, Clausewitz was appointed to the largely administrative post of the director of the War College in Berlin. It was here, with time on his hands, that he "returned seriously to theoretical work."[11] During the past decade, "he had been very close to important and varied actions and yet always somewhat detached from them. . . . When eventually peace was restored, his role became more and more that of a critical and synthesizing observer."[12] It was at this point in his life (at approximately 36 years of age) that he began to consolidate from the thousands of his handwritten manuscript pages "a collection of essays . . . which gradually coalesced into a comprehensive theory that sought to define universal, permanent elements in war."[13] This material was later to become his most influential work, On War.

Perhaps the most important factor affecting On War, however, was Clausewitz's personality. Michael Howard claims that Clausewitz "was always something of an introvert; solitary, bookish, shy, intellectually arrogant."[14] Yet, based on letters written to his wife, we also know that he was a passionate man—one who was sensitive to the sufferings inherent in war. Thus, he paid far more attention to the human side of warfare than did many of his contemporaries (such as Jomini and Bulow, whose writings about war gloss over this important consideration). But the effect of his personality on his work was possibly even more acute than this example suggests.

Bernard Brodie felt that Clausewitz

"seems to have had something more than the usual psychological need for recognition, which for him could come [only] through some mode of excellence in the profession in which he found himself."[15] Marie von Clausewitz hinted at the source of his motivation when she wrote of her husband that although he was free "of any petty vanity, of restless egotism and ambition, he nevertheless felt the need to be truly useful, and not let his God-given abilities go to waste."[16] Throughout his career, however, Clausewitz served as a staff officer and never as a commander. This man, appointed to the rank of major general at the age of 38, "still felt not sufficiently noticed."[17] Bernard Brodie goes so far as to suggest that "the intriguing question is how much this man's neurosis affected his final work."[18] Lack of recognition may, therefore, have spurred Clause-

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witz's intellectual efforts. Although the effects of his personality on his work are debated, one thing is certain: Clausewitz maintained an interest in a variety of intellectual disciplines throughout his mature years—in particular, philosophy.

There has been a great deal of discussion concerning which philosophers affected Clausewitz. The three that are normally bandied about are Montesquieu, Hegel, and Kant. The contribution of Montesquieu is not normally challenged. From him, Clausewitz developed a desire to write in an uncluttered, direct fashion as free from ambiguity as possible. His success is evident, yet perhaps underrated, in that short sections of On War can be quoted to explain entire chapters.[19]

The influence of Hegel and Kant is more

open to question. Brodie states that Clausewitz, "in his desperate hunger for knowledge read Kant . . . [but] the one he obviously followed with the most respect and whose dialectical method he unfortunately adopted . . . was clearly Hegel."[20] On the other hand, Roger Parkinson, an English biographer of Clausewitz, does not even mention Hegel, crediting Kant as the philosopher who influenced him the most.[21] To a large extent, the argument is immaterial because "Clausewitz' lifetime coincided with the golden age of modern German scholarship, science, letters, and music."[22] Michael Howard points out that "Clausewitz did not need to read the works of his contemporary Kant . . . to become familiar with the ideas that formed the basis of Kant's philosophy. He had also reabsorbed those ideas that had re-entered philosophical thought with the revival of Hellenism . . . the Socratic distinctions between the ideal and its manifestations, between the absolute, unattainable concept and the imperfect approaches to it in the real word."[23] Clausewitz's methods, therefore, came "second and third hand from his cultural environment."[24]

His intent with On War was "to write a book that would not be forgotten after two or three years, and that might possibly be picked up more than once by those who are interested in the subject."[25] According to Paret, Clausewitz planned to accomplish this purpose by penetrating "by means of logical analysis to the essence of absolute [or 'ideal'] war . . . [in order] to understand war in the various forms it actually takes, as a social and political phenomenon, and in its strategic, operational, and tactical aspects."[26] Unlike many of his contemporaries, Clausewitz felt that war was inevitable and an "integral part of the world order" and so was something that was to be analyzed and understood, not shunned.[27]

During Clausewitz's lifetime, the conduct of war had been transformed. In order to come successfully to grips with this change, he needed to reexamine the subject

thoroughly. We can see the direction of Clausewitz's analysis in *On War* as it was organized for final publication. The first book, "On the Nature of War," defines war and its place in the world order. It also identifies those elements that are always present in war. The next book, "On the Theory of War," discusses the possibilities and shortcomings of theory. Books three through seven discuss aspects of war at what today would be termed the operational and tactical levels. It is here that he goes into a detailed discussion of the themes developed in the first two books. The final book, "War Plans," once again takes up the themes of the dual nature of war and in "a sweep of theoretical and historical essays of great originality" looks at "the political character of war and the interaction of politics and strategy." This organization "does not, however, constitute a sure guide for the reader" because the "distinctions between the parts are less important than is the network of themes and arguments that links them."[28]

The first, and most important, problem was to define war and its nature. Clausewitz attempted to develop a concept of war as a Socratic ideal, stripped of all its outside influences.[29] From this standpoint, war became a duel on a large scale, "an act of force to compel our enemy to do our will."[30] War, then, tended to become a series of "reciprocal actions" as each contestant attempted to overwhelm the other by the use of force. Once begun, this contest led to extremes (in theory) in that there was no "logical limit" to the application of force.[31] The aim of this violence, at least from a theoretical standpoint, was to bring about the complete overthrow of the enemy.[32]

Clausewitz felt that the role of theory was to assist in the comprehension of reality and, more specifically, history. However, his historical studies convinced him that this view of war as always moving to an absolute form was incorrect,[33] because war was "often far removed from the pure concept postulated by theory."[34] In an attempt

to come to grips with this problem, Clausewitz used a modified form of Hegel's dialectic.

R. N. Carew Hunt defines the dialectic as "the theory of the union of opposites." Essentially, this definition means that a certain idea, proposition, or condition (thesis) contains in it certain weaknesses or flaws (contradictions). As these faults are exposed over time, there develops a counter or opposite (antithesis). The antithesis itself contains certain contradictions as well, and slowly a synthesis arises that embraces the truths involved in both.[35] Clausewitz did not use this method exactly, however, because this "formal, highly structured" approach "would have seemed inappropriate."[36] Clausewitz viewed the dialectic as "a continuous interaction between opposite poles, each fully comprehensible only in terms of the other."[37] One of the benefits of this approach was that "it defines each element as sharply as possible while insisting on the absence of discrete limits." Moreover, the poles "are never absolute opposites; rather one flows into the other."[38]

The opposite of the "pure" form of war and the other part of its "dual" nature was war constrained by limits. The primary factor that limited conflict was its subordination to politics, for the "political object . . . will . . . determine both the military objective to be reached and the amount of effort it requires."[39] War was not "a complete, untrammeled, absolute manifestation of violence (as the pure concept would require), [for otherwise] war would of its own independent will usurp the place of policy the moment policy had brought it into being."[40] Another factor that acted to force war further from its ideal form was the play of chance and probability.[41] "No other human activity is so continuously or universally bound up with chance. And through the element of chance, guesswork and luck come to play a great part in war."[42]

Thus, Clausewitz identified the three dominant tendencies of war (or paradoxical

trinity as he called them): war's "primordial violence," its subordination to policy, and chance. In order to be completely understood, wars must be fully analyzed using these elements, for this "trinitarian definition still contains a decisive innovation—*it alone is valid for real wars and it is valid for all real wars.*"[43]

Yet, to take advantage of this framework and not overwhelm it with the mass of available data, Clausewitz realized that the "principal detail[s] must be grouped and abstracted." Accordingly, Clausewitz developed other concepts to help explain specific operational characteristics or general ideas.[44] It is here that soldiers have tended to focus their reading because Clausewitz offers "certain ideas and convictions" that are presented "like small nuggets of pure metal."[45] Two of the most intriguing and interesting are the concepts of friction and the culminating point.

To some extent, the concept of friction is merely an elegantly stated predecessor of Murphy's Law: "Countless minor incidents—the kind you can never really foresee—combine to lower the general level of performance, so that one always falls far short of the intended goal."[46] It is "the force that makes the apparently easy so difficult."[47] Anyone who has been on a military exercise can recount countless incidents of friction in action, but it is best illustrated by the parachute drops into Normandy prior to the D-day landings on 6 June 1944.

Planning for this operation had been under way for many months (some elements, for years) prior to the execution of the plan. The almost disastrous Allied parachute drop into Sicily had prompted a great deal of thought about how to make the D-day insertions error free. In order to reduce the dispersion of the jumpers, specially trained pathfinders were to land prior to the arrival of the main elements of the airborne forces. They were to mark the drop zones with lights that, based on various patterns and colors, would indicate what units were to drop where. To avoid repeating the debacle at Sicily—where a nervous, trigger-happy

invasion fleet fired at the airborne armada causing serious loss—planners routed air corridors away from friendly naval formations. Certain measures aided in the identification of friendly troops on the ground: American flags were sewn onto the upper arms of uniforms, and a special order was placed for thousands of children's noise-makers called "crickets" to enable friendly soldiers to identify one another in the dark.[48]

Notwithstanding all this detailed preparation, a glance at the dispersal patterns of individual planeloads or "sticks" presented in *The West Point Atlas of American Wars* shows that jumpers were still widely scattered.[49] Some of the pathfinder equipment failed to work, and several of the pathfinder groups were improperly placed. These problems were compounded by heavy antiaircraft fire over the Cotentin Peninsula, patchy cloud cover, and recently arrived and inexperienced transport pilots. As a result, many of the paratroopers were dropped miles away from their drop zones, some even in the English Channel. Gen Maxwell Taylor, commander of the 101st Airborne Division, found himself alone for several minutes after he hit the ground. Several hours later, he had gathered together only 90 soldiers. Their skills ranged from those of military policemen to clerks to infantrymen. Moreover, the contingent was heavy on officers, causing Taylor to remark that "never were so few led by so many."[50] In this case, a combination of planned-for and unforeseen incidents caused operations to go awry and almost doom several thousand highly trained Allied soldiers.

Somewhat related to the concept of friction is that of the culminating point. Just as friction detracts from the efficiency and combat power of the force so does the concept of the culminating point deal with the gradual decrease in a unit's available combat power. Losses, extension of an area of operations, and the requirement for garrisons all cause an attacking force to get to the "point where their remaining strength

is just not enough to maintain a defense and wait for peace. Beyond that point the scale turns and the reaction [counterattack] follows with a force that is usually much stronger than that of the original attack."[51]

In 1942, the forces of Gen Erwin Rommel had defeated the British in the North African battles around El Gazala and Bir Hacheim. The German pursuit lasted until the British reached the strong natural defensive position at El Alamein. The Qattara Depression to the south and the Mediterranean to the north effectively restricted Rommel's room to maneuver and channeled him into a narrow corridor, depriving him of the advantages he had enjoyed in the more open arenas to the west. Here the pursuit stalled, and the race began to see which side could first reconstitute and replenish its forces. Rommel's supply lines were stretched along the coast of North Africa and from there back across the Mediterranean. The British were able to draw upon their system of bases in Egypt, and their possession of Malta enabled them to interdict Rommel's supply lines, thus giving them a marked advantage. By October, when the British had achieved clear superiority in all classes of weaponry, supply, and manpower, they attacked—driving the Germans back to Tunisia far to the west.[52] The Germans had reached beyond their culminating point and paid the price. Rommel gambled at El Alamein and lost. Clearly, Clausewitz has lessons to offer the practicing professional, but how did he influence those who followed him?

Bernard Brodie once wrote that, in his view, Clausewitz's influence "was rather low, perhaps very low."[53] The 1,500 copies of the first edition of *On War* were not sold until 20 years following its publication in 1832.[54] The European discovery of Clausewitz was slow and closely related to the emergence of Helmuth von Moltke as chief of the General Staff of the Prussian army and Prussia's successes in the wars of 1866 and 1870. Moltke claimed that Clausewitz, the Bible, and Homer had influenced him tremendously. The result was that "Clause-

witz instantly became fashionable."[55] Moltke looked primarily at the operational aspects of Clausewitz's writing and insisted that the concept of military subordination to political control should be reversed. Unfortunately, "it was Moltke's view of the matter, not that of Clausewitz, which became dominant in Imperial Germany . . . even though it was during these years that Clausewitz was being most widely acclaimed."[56] Colmar von der Goltz, in *The Nation in Arms* (1883), pushed for the adoption of the idea (in theory adopted from Clausewitz) that wars should be pushed to their utmost limits.[57] Although a direct contradiction of Clausewitz's idea that effort in wars should be proportional to political goals, von der Goltz's proposal was in accordance with the theoretical concept that wars will always seek the extremes in violence.[58]

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Similar notions were developing in France. The popularity of Ardant du Picq's writings on the value of the moral force in war coincided with the introduction of a course of lectures on Clausewitz given at the École de Guerre in 1884, "which was to influence an entire generation of French officers; the generation which was to mold the thinking of the French army at the turn of the century and to lead it during the Great War."[59] These "wrong-headed" ideas of war pushed to the upper limits of violence and the superiority of moral forces were to bring about the bloodbaths on the Western Front in World War I. As Sir B. H. Liddell Hart wrote, generals became "intoxicated with the blood-red wine" that they thought they saw in *On War.*[60]

But World War I turned the attention of soldiers in the United States to Clausewitz, and by 1928 his "stature as an oracle" had "risen rapidly" even though the first American translation of Clausewitz was not published until 1943.[61] However, Russell Weigley persuasively argues in *The American Way of War* that Clausewitz's teachings neither coincided with the American temperament nor were suitable to the next war (World War II) this country was called upon to fight because it was total in nature.[62]

Following World War II, the United States turned to its nuclear monopoly as a guarantor of peace and safety. The war in Korea, confrontations around the globe with communism in "nonshooting" wars, and dissatisfaction with the options offered by the policy of massive retaliation led to a surge of criticism during the late 1950s. When John F. Kennedy became president in 1961, he wholeheartedly adopted the strategy of flexible response. Although it appeared that the Clausewitzian concept of linking the use and amount of force to political goals was finally realized, there were problems in its application. Instead of weighing the imponderables of war as Clausewitz insisted, military thinkers in the 1960s emphasized "the rationalistic side of the equation. A concern with the quantifiable [that] may have led to an underestimation of the intangible."[63] The result was a "routinization, the bureaucratization of the application of force."[64]

The trauma that the nation and the armed forces suffered in Vietnam has turned the attention of many people to a more detailed study of Clausewitz. It is interesting to note, however, that Clausewitz can be applied to the same situation but yield different results. In *On Strategy,* Col Harry G. Summers argued that we failed to view the war in Clausewitzian terms and thus were unable to determine its true nature. The United States, in this view, focused on the counterinsurgency effort in South Vietnam, dissipating effort that should have been directed against the actual source of the problem—North Vietnam.[65] Lt Col William Staudenmaier, on the other hand, argued in *Parameters* that we performed poorly in the war by not recognizing that its true key was the support of the people in the south.[66] The issue has yet to be resolved and will provide a fertile ground for generations of scholars.

In the last 150 years, Clausewitz has been condemned, maligned, misunderstood, praised, and hailed as a genius. It is too early to tell whether or not the current "Clausewitzian revival" is transient or permanent. Paret, however, claims that "European and American defense analysis no longer finds Clausewitz as an obstacle to be overcome or avoided. Often without realizing it, writers are pursuing the goals indicated by Clausewitz: the defining of means, ends, and implications, so that they can be used theoretically and applied in the formulation of policy."[67] What *is* certain is that both "as theorist of war and as an interpreter of Europe entering the modern age, Clausewitz has come to mean more to this century than he did to his own."[68] Today's officers should study Clausewitz and draw their own conclusions.   □

Notes

1. Amos Perlmutter, "Carl von Clausewitz: Enlightenment Philosopher: A Comparative Analysis," *The Journal of Strategic Studies* 11, no. 1 (March 1988): 7–19.

2. Bernard Brodie, "In Quest of the Unknown Clausewitz," *International Security* 1, no. 3 (Winter 1977): 66.

3. Peter Paret, "Clausewitz' Bicentennial Birthday," *Air University Review* 31 (May–June 1980): 18.

4. Russell Weigley, *The American Way of War* (New York: Macmillan Publishing Co., Inc., 1973), 511, footnote 38.

5. Bernard Brodie, "The Continuing Relevance of On War," in *On War*, ed. and trans. Michael Howard and Peter Paret (Princeton, N.J.: Princeton University Press, 1984), 58.

6. Peter Paret, "Clausewitz: A Bibliographical Survey," *World Politics* 17 (October 1964): 272.

7. Michael Howard, *Clausewitz* (New York: Oxford University Press, 1983), 8.

8. James King, "On Clausewitz: Master Theorist of War," *Naval War College Review* 30 (Fall 1977): 9.

9. Peter Paret, "The Genesis of On War," in *On War*, ed. and trans. Michael Howard and Peter Paret (Princeton, N.J.: Princeton University Press, 1984), 3.

10. King, 9.

11. Paret, "Genesis," 19.

12. H. Rothfels, "Clausewitz," in *Makers of Modern Strategy: Military Thought from Machiavelli to Hitler*, ed. Edward Mead Earle (Princeton, N.J.: Princeton University Press, 1944), 96.

13. Paret, "Genesis," 3.

14. Howard, 5.

15. Brodie, "Continuing Relevance," 49.

16. Carl von Clausewitz, *On War*, ed. and trans. Michael Howard and Peter Paret (Princeton, N.J.: Princeton University Press, 1984), 66.

17. Bernard Brodie, "On Clausewitz: A Passion for War," *World Politics* 25, no. 2 (January 1973): 300.

18. Ibid. Paret, however, "disputes the commonly expressed opinion that Clausewitz was embittered by his failure to achieve greatness" (King, 11–12).

19. Peter Paret, "Clausewitz," in *Makers of Modern Strategy: from Machiavelli to the Nuclear Age*, ed. Peter Paret (Princeton, N.J.: Princeton University Press, 1986), 187, hereafter cited as Paret. See also Clausewitz, 63.

20. Brodie, "On Clausewitz," 290.

21. Ibid.

22. King, 5.

23. Howard, 13–14.

24. Paret, 194.

25. Clausewitz, 63.

26. Paret, 198.

27. Hew Strachan, *European Armies and the Conduct of War* (Boston: George Allen and Unwin, 1983), 94.

28. Paret, 197–98. Books three through seven are "On Strategy in General," "The Engagement," "Military Forces," "Defense," and "The Attack." Clausewitz regarded only chapter 1 of book 1 as completely finished (Clausewitz, 70). The unfinished nature of the work has led to much discussion about what Clausewitz meant on a number of issues.

29. Howard, 13.

30. Clausewitz, 75.

31. Ibid., 77.

32. Ibid., 69, 77, 91.

33. Paret, "Genesis," 23.

34. Clausewitz, 91.

35. R. N. Carew Hunt, *The Theory and Practice of Communism* (Baltimore, Md.: Penguin Books, 1963), 42–44.

36. Paret, "Genesis," 15.

37. Howard, 34.

38. Paret, "Genesis," 15.

39. Clausewitz, 81.

40. Ibid., 87.

41. Ibid., 89.

42. Ibid., 85.

43. Raymond Aron, "Clausewitz' Conceptual System," *Armed Forces and Society* 1, no. 1 (Fall 1974): 56.

44. Paret, 202.

45. Clausewitz, 62.

46. Ibid., 119.

47. Ibid., 121.

48. Clay Blair, *Ridgeway's Paratroopers* (Garden City, N.Y.: Doubleday & Co., Inc., 1985), 176–252.

49. Brig Gen Vincent J. Esposito, ed., *The West Point Atlas of American Wars Vol II* (New York: Praeger Publishers, 1972), chart A following map 49.

50. Maxwell D. Taylor, *Swords and Plowshares* (New York: W. W. Norton & Co., Inc., 1972), 80.

51. Clausewitz, 528.

52. Esposito, 75–80.

53. Brodie, "In Quest," 63.

54. Strachan, 98.

55. Howard, 59.

56. Michael Howard, "The Influence of Clausewitz," in *On War*, ed. and trans. Michael Howard and Peter Paret (Princeton, N.J.: Princeton University Press, 1984), 31.

57. Howard, *Clausewitz*, 63.

58. Ibid.

59. Howard, "Influence," 37.

60. Rothfels, 93.

61. Weigley, 210–11.

62. Bernard Brodie offers an interesting definition of total war in "Strategy Versus Tactics in a Nuclear Age," in *Brassey's Annual* (New York: The Macmillan Co., 1956). He claims that there is a distinction between the "hackneyed" phrase *total war* and unlimited or unrestricted war (which he refers to as "war out of control"). Total war in this view represents a war in which every last resource of the state, "moral and intellectual as well as physical would be mobilized and coordinated by the government. . . . It tended to emphasize the totalitarian administration of the war rather than the rejection of any inhibitions or restraints in the conduct of fighting or in the choice of objectives" (145, footnote). Weigley states that Americans tended to fight wars in a manner that had the objective of overthrowing the enemy. Weigley sees this overthrow as being aimed at the complete destruction of the enemy's armed forces and not the destruction of the opposing society. Aiming at a goal such as this resulted in the "strategy of annihilation . . . [becoming] characteristically the American way in war" (xix to xxii). From both of these standpoints, World War II was, therefore, a total war. But perhaps the only truly total war was the Third Punic War, where the victorious Romans pulled down the walls of the city of Carthage, slaughtered the population or sold them into slavery, and salted the earth so that this power could no longer threaten them. Not only was the enemy's army overthrown, but also the society was destroyed.

63. Robert Miewald, "On Clausewitz and the Application of Force," *Air University Review*, July–August 1968, 78.

64. Ibid., 77.

65. Col Harry G. Summers, Jr., *On Strategy* (Novato, Calif.: Presidio Press, 1982), xiv, 4, and especially 94–95.

66. Lt Col William Staudenmaier, "Vietnam, Mao, and Clausewitz," *Parameters* 7, no. 1 (1977): 79–89.

67. Paret, "Bibliographical Survey," 284.

68. Peter Paret, "Clausewitz and the Nineteenth Century," in *The Theory and Practice of War*, ed. Michael Howard (New York: Frederick A. Preager, 1965), 39.

TARGETING FOR VICTORY

The Rationale Behind Strategic Bombing Objectives in America's First Air War Plan

C1C Steven A. Parker, USAFA

ON 9 July 1941 President Franklin Delano Roosevelt sent letters to the secretary of war and the secretary of the Navy asking for "an estimate of the 'overall production requirements required to defeat our potential enemies.'"[1] Wesley F. Craven and James L. Cate note that, "within the War Department, responsibility for giving effect to the President's directive . . . devolved upon the War Plans Division."[2] Within the air arm, it fell to the newly created Air War Plans Division. On the morning of 3 August 1941, the division—less than four weeks old at the time—set out to create what would become a blueprint for the American air campaign in the approaching war with Germany. This document would be known as Air War Plans Division—Plan 1 (AWPD–1).

According to Craven and Cate, "actual authorship of a military document is seldom known." This fact was especially apparent in the development of AWPD–1, since "a number of officers from the several staff agencies of the AAF [Army Air Forces] . . . contributed information which went into AWPD/I."[3] In the end, however, the creative genius of four individuals was primarily responsible for AWPD–1. Barry D. Watts writes that the "theory of precision bombardment . . . called for the identification, *by scientific analysis*, of those key links in the enemy's economy whose elimination would either cripple his capacity to wage war or else shatter his will to continue fighting."[4] In constructing the war plan, the four men drew upon years of doctrinal analysis and theoretical application of the principles of war, relying heavily upon their years of instruction and education at the Air Corps

Tactical School (ACTS) at Maxwell Field, Alabama. Donald Wilson notes that the key concept taught at the school was that a nation's ability to pursue war "would depend on maintaining intact a closely-knit and interdependent industrial fabric." Precision bombing, however, could destroy this fabric.[5] By concentrating Allied bombing against objectives vital to the German war effort and the German people's livelihood, AWPD–1's planners aimed to accomplish the primary goal of any war—to defeat the enemy by breaking his will to fight. To accomplish this goal in the simplest and most efficient manner, Allied bombers were tasked with destroying the enemy's forces before they deployed into the field.[6] AWPD–1's developers sought to destroy Germany's capability to fight by attacking it at the home front and, in doing so, wreck the country's will to resist. These

efforts contributed to shaping the general nature of Air Force thinking for years to come.

Gen Henry "Hap" Arnold, chief of the Air Corps at the time of AWPD–1's conception and—after March 1942—commanding gen-

The planners, AWPD–1

Gen Henry H. Arnold, chief of the Air Corps (right), was well served in the development of AWPD-1 by a group of exceptional officers. These men (pictured left to right, below) began to write AWPD-1 only four weeks after the Air War Plans Division had been formed. Maj (later Lt Gen) Laurence Kuter had worked on earlier Air Corps plans. The chief of the Air War Plans Division was Lt Col (later Brig Gen) Harold George. Maj (later Maj Gen) Haywood Hansell became a driving force in the air war plans against both Germany and Japan. Lt Col (later Brig Gen) Kenneth Walker was a major proponent of strategic bombing. He was posthumously awarded the Medal of Honor for his part in a bombing mission that cost him his life.

Kuter

George

Gen. Henry H. Arnold

eral of the AAF, "had chosen wisely in selecting Harold George to head the new Air War Plans Division of the Air Staff."[7] George possessed an extensive background in air power, and years of instruction at ACTS gave him the experience required to lead the Air War Plans Division in the development of a sound war plan.[8] In addition, Colonel George had testified at the 1925 Morrow hearings, which covered the force requirements of the US Army Air Service in detail. At this point in his career, he had developed a great deal of knowledge on aircraft capabilities and Air Corps constraints.

George was pleased to find that he would be working with Lt Col Kenneth Walker, who had taught George at ACTS.[9] Walker served as a bombardment instructor at the school, and during his stay he coined the "rallying cry" of the entire bombardment

Hansell

Walker

The training and experience gained at the Air Corps Tactical School, such as instruction in using maps (above), allowed AWPD-1 to be produced in nine days. Major General Hansell attributed the ability of the Air War Plans Division to accomplish this difficult task to the concepts of air warfare developed at the school, which the division's members held in common.

division: "A well planned and well organized air attack once launched cannot be stopped." This motto became the "creed of the bomber," and the doctrine it represented was largely inspired by Colonel Walker.[10]

Maj Gen Haywood S. Hansell, Jr., recalls his introduction to the project: "The day following his assignment as Chief of the Air War Plans Division George learned that I, who was then in General Arnold's Intelligence Division, had just returned from England where I had been in contact with officers of the Intelligence Group of the Royal Air Force."[11] General Arnold wasted no time in having Hansell transferred to the Air War Plans Division. James C. Gaston notes that Hansell, whose contributions to AWPD-1 were tremendous, had gathered "intelligence about the economic-industrial systems and air forces of foreign powers." This allowed him to coordinate targets, based on his own familiarity with the general pattern and potential of various industrial components.[12] He combined this knowledge with the practical information that he had obtained through British Intelligence to provide insight into the specific nature of the German economy.

Maj Laurence Kuter, another graduate of ACTS, was on the faculty with Hansell. Gaston points out that Kuter had worked extensively with the "first major expansion of the Air Corps into a force for hemispheric defense," and his vast experience qualified him to develop similar plans utilized in AWPD-1.[13]

The four men worked well together. They had to, since they had only nine days to accomplish their mission. "We had one

definite asset going for us," stated Hansell in his memoirs. "We had spent years together as instructors in Bombardment and Air Force at the Air Corps Tactical School. We embraced a common concept of air warfare and we spoke a common language."[14] Years of studying and preaching the doctrine of precision bombing came to a climax in August of 1941 when General Arnold tasked these four men to develop a war plan. Kuter later commented that "'when the time for critical decision arrived the American concept [of air warfare] was wholly indorsed, completely accepted, and officially implemented in the approval of a paper entitled "AWPD–1".'"[15]

"Strategic plans involve, of course, a constant accommodation between desires and capabilities," Hansell noted.[16] AWPD–1 was the result of numerous struggles between such desires and capabilities, and the first step was to examine overall conditions in Germany. At the time of AWPD–1's conception, over 8 million men served in the German military. An additional 8.5 million were estimated to work in armaments works alone, with over half of them in the steel industry. In all, nearly 17 million people supported the German war effort— not including civil pursuits and production—and the perceived result was a tremendous drain on the social and economic structure of the nation.[17] The most effective method of waging war against Germany appeared to be by destroying this inner structure and thereby breaking down the country's capacity to wage war. As George had stated in a lecture at ACTS, "There is one thing certain: air power has given to the world a means whereby the heart of a nation can be attacked at once without first having to wage an exhaustive war at the nation's frontiers."[18] Germany had to be destroyed from the inside so that the outer walls would crumble, and the first step in planning was to determine a list of targets within the heart of the nation that would bring about the desired collapse.

The target selection process used in AWPD–1 evaluated four possible options to accomplish the air mission in Europe. These options included, in order of priority, the disruption of a major portion of Germany's electric power system, the disruption of the German transportation system, the destruction of German oil and petroleum systems, and the undermining of German morale by air attack on civil concentrations. A list of intermediate options was cited that would be used to improve the chances of success against the major objectives. These options included the neutralization of the German Air Force and diversionary bombing attacks. These targets would continue as appropriate bomber objectives in the final phase of warfare if invasion became necessary. In this case, additional targets of opportunity in the combat zone and battlefield proper would be added according to the situation, since selecting such targets would not be feasible during the drafting of the basic plan.[19]

The air-war planners placed German electric power at the top of the list on the basis of current intelligence information. At the time of the plan's conception, the German electric system was the second largest in the world, and it expanded considerably for the war.[20] Initially, the system's output was adequate to maintain German productivity. But as mobilization increased—especially after 1939—power shortages became serious enough to force the rationing of electric power to homes and industries nationwide.[21] Electric power affected every production aspect of the war—from aircraft manufacture to urban transportation—and it was closely integrated into a "power grid" that, if destroyed, would theoretically isolate principal manufacturing and population centers from their sources of electric energy.[22]

Capt Robert Webster, an instructor at ACTS during the 1936–37 school year, had noted the importance of electric power to an advanced industrial nation. Basing his assessments on research he had done on the electric structure of New York City, Webster concluded that approximately one-tenth of the people in the United States

depended daily on the electric power provided by 20 power plants in New York. At the cost of one accurately dropped bomb on each of these potential targets, 90 percent of the power in the city would be destroyed, causing its immediate evacuation.[23] By comparing this information with what was known about the German electric system of the time, Webster demonstrated the advantage of destroying this potential target.[24]

In December 1942 General Arnold issued a directive to the director of management services to have a group of operational analysts submit a report "'analyzing the rate of progressive deterioration that could be anticipated in the German war effort as a result of the increasing air operations we are prepared to employ against its sustaining sources.'"[25] The resulting committee of operations analysts (COA) reevaluated what George and his staff had painstakingly developed.

The target systems most carefully considered by the COA closely resembled those of AWPD–1 and its successor, AWPD–42.

The destruction of the German transportation system, including the rail yards at Ulm (right, above), was a major priority of AWPD-1. Attacks by Allied bombers against German cities such as Nuremberg (right, below) adversely affected German morale.

A good example of key transportation targets is shown in this picture (below) of bridges over the Rhine River at Neuwied. Rail, road, and river-barge traffic all had to be stopped if the Allies were to effectively hinder the German transportation system, the target of second highest priority in AWPD-1.

NURNBERG
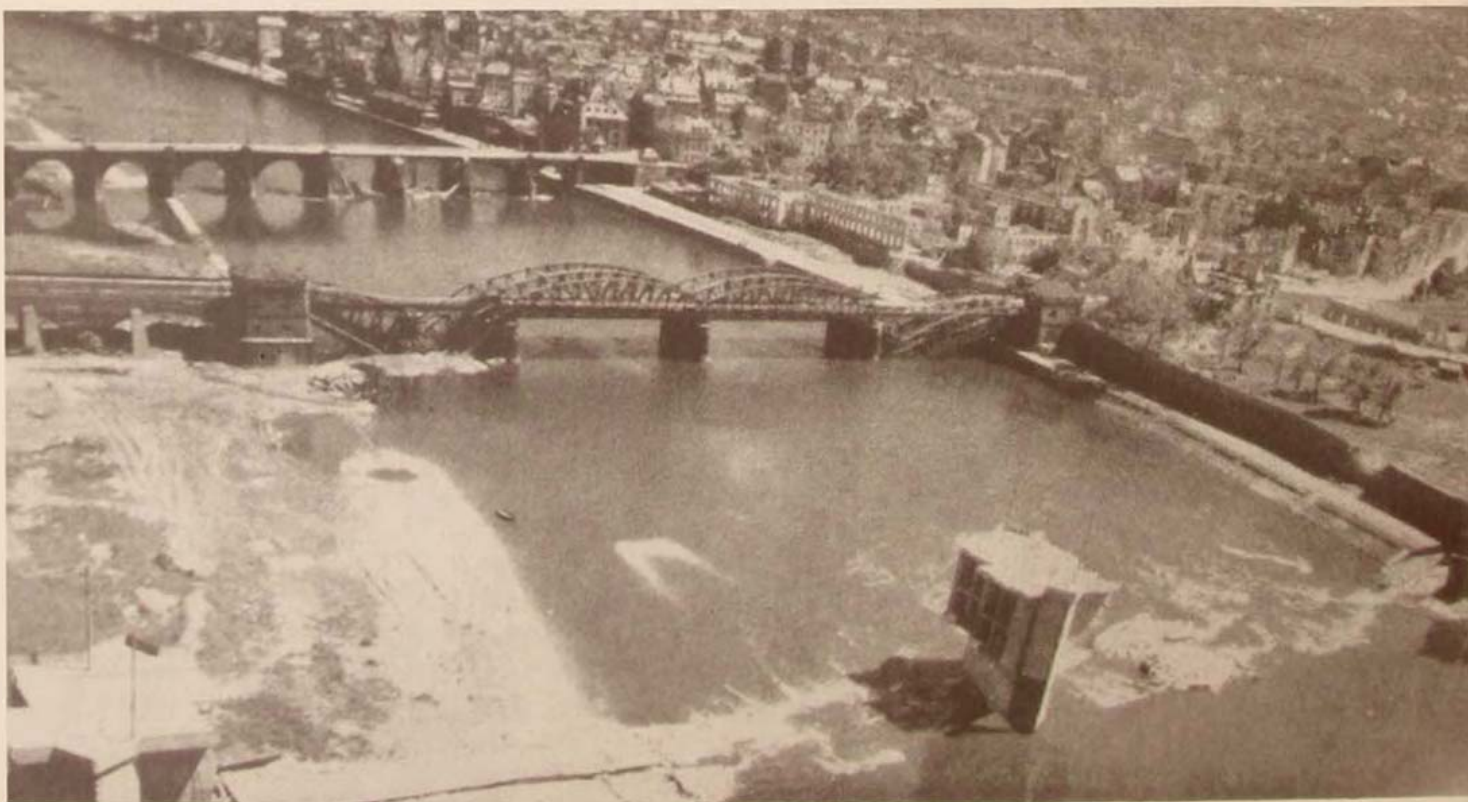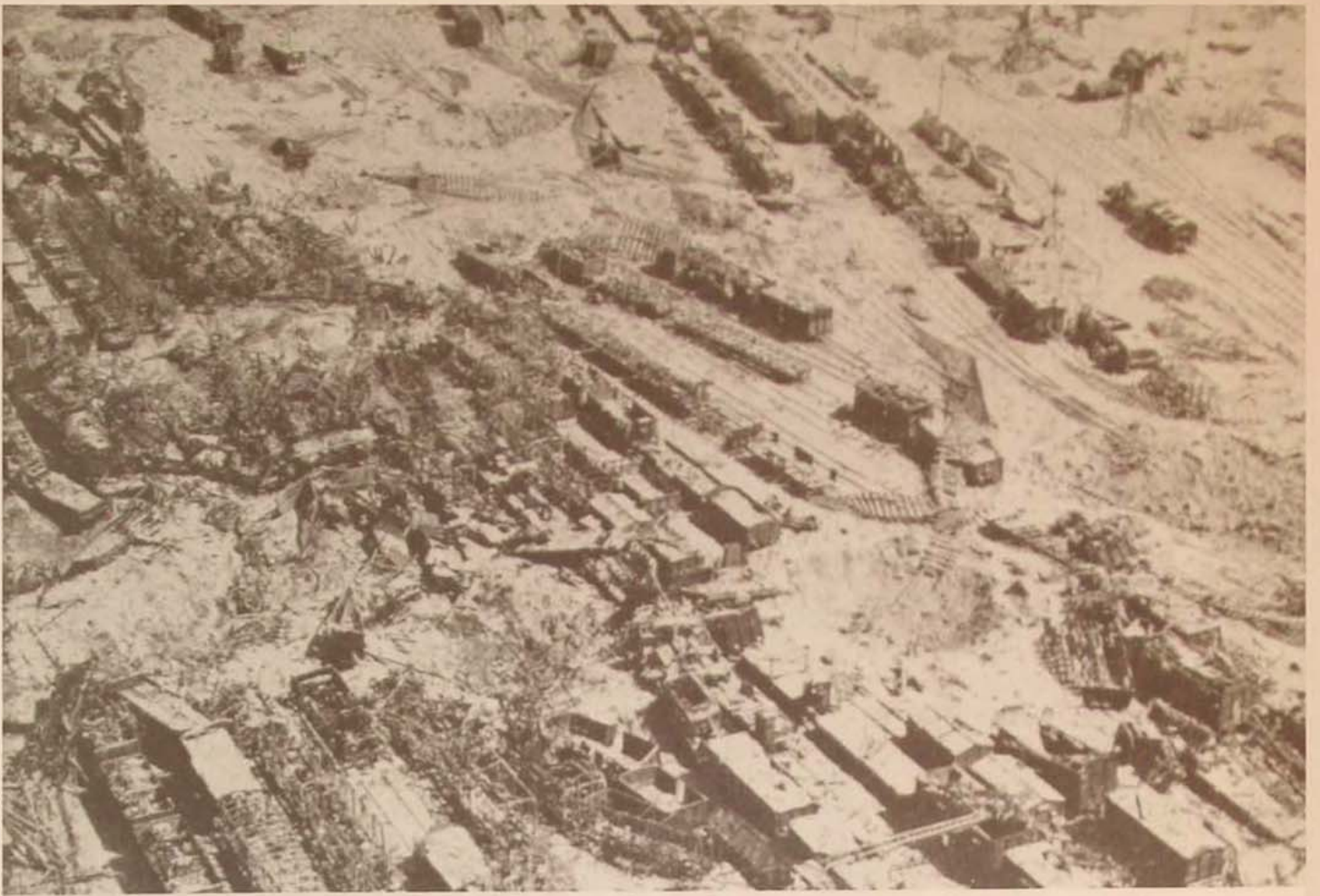
However, some significant differences existed between the COA's target selection list and the list that George and his crew had developed in AWPD–1. Hansell points out that Germany's electric power system became 13th in priority.[26] According to Hansell, this shift of priorities constituted "one of the tragic mistakes of the war."[27] He speculates that two possible motives contributed to this change: the COA had determined that attacking German electric power systems would have no effect on setting a date for the invasion of Europe, or available forces did not have the "operational capability" to destroy the targets.[28] Hansell's treatment of the subject in the years following the war indicates that the civilian analysts and intelligence personnel operated out of their proper province in making such a decision. He contends that military operations analysts—who had already evaluated the force's capability to destroy each target system—should have made the final targeting decisions.[29]

The second-priority target in AWPD–1 was the German transportation system. George noted that the selection of transportation systems as a target came from the realization that "the trend in modern nations has been towards industry and agriculture, which makes for large territories which are not self-supporting."[30] Mobilization highlighted the interdependency between the city dweller and rural communities. By cutting off the vital lines of transportation, Allied forces could apparently eliminate an important source of economic stability and military strength, and tax the enemy's will to wage war.

AWPD–1 divided the transportation system into three main components. Railroad operations took up 72 percent of the total, and waterways and long-haul truckage took up 25 percent and 3 percent, respectively. One of the key factors in choosing transportation targets was that the railroad systems were already operating at maximum capability, so they could not handle any excess requirements in the event of breakdown in any of the other areas.[31]

Railroads appeared to be profitable strategic targets for several reasons. The majority of the railroads served the Ruhr, which possessed 70 percent of the nation's steel industry. Bombers could therefore restrict their operations to a smaller area, thus performing the majority of attacks with optimal results. Additionally, an estimated eight marshaling yards handled all of the traffic to the Ruhr, and these potential targets were only 350 miles from Great Britain. The railroad targets, however, were more easily repaired than other targets. This factor meant that Allied forces would have to make repeated attacks.[32]

Inland waterways were essential to German transportation as well, since they carried what the railroads could not handle. The locks and ships chosen by the air-war planners were precision targets, as opposed to the area targets represented by the railroads. But their destruction—unlike the destruction of the railroads—would have a relatively permanent effect on the German transportation system due to the increased amount of time required to return them to operation.[33]

Total destruction of the transportation system would sever Germany from the rest of Europe, leaving only its own inadequate supplies of foodstuffs, raw materials, and the like. Forty-seven targets were chosen in AWPD–1 to accomplish this task, and their selection highlighted the fact that two-thirds of Germany's iron ore arrived from external sources.[34] Transportation remained a primary target throughout the development of an American air strategy, and—to many observers—this choice of targets appeared to deliver the decisive blow to the German economy.[35]

AWPD–1 listed synthetic oil as the third-priority target system. The effects of a decisive attack on the petroleum-producing industries of an enemy nation seemed obvious. Without petroleum, planes could not fly, tanks could not roll, and a good percentage of the transportation of vital war materiel could not occur. Essentially, all German forces were dependent on oil, and

its destruction would render helpless an industrialized nation waging total war.

Oil and petroleum products were promising bombardment targets from the start. Approximately 60 percent of Germany's aviation gas was synthetic, and 80 percent of this total came from 27 plants located 400 to 1,000 miles from Great Britain. Twenty-two percent of its aviation gas came from Romania, delivered by water transportation up the Danube.[36] In fact, well over 50 percent of Germany's imports came directly from Ploesti. Therefore, the destruction of all the synthetic plants in Germany would not have the required effect on the nation's war effort unless the Allied forces destroyed the oil refineries at Ploesti as well. Twenty-six plants producing approximately 70 percent of the Nazis' aviation gas were within Germany. Because they were fairly deep within the country and were precise, small targets, they would be hard to destroy.[37] However, they seemed to be essential targets, so their priority never substantially changed throughout the bombing offensive.

AWPD–1's planners had assumed that the oil-producing targets would be difficult to replace, but they were mistaken. The Germans rebuilt oil refineries and put them back in operation in less time than the six months estimated in the war plan, so repeated attacks were necessary to assure effectiveness.[38]

The effects of the Allied attack on the petroleum and oil industry were more pronounced in the latter stages of the war. One instance of the Germans' suffering noticeably from this lack of oil occurred on 3 March 1945, when the Germans counterattacked the Soviet forces in western Hungary. Donald W. Treadgold relates that "the blow was . . . spearheaded by the German Sixth SS Panzer Army, which had led the thrust into the Ardennes. The Germans broke through the Soviet front . . . and came near to reaching the Danube. However, as in the Ardennes offensive, the tanks ran out of gasoline, and by the middle of March the Nazi salient was eliminated."[39]

The fourth priority listed in AWPD–1 was to undermine German morale by air attack on civil concentrations. This aim coincided with the prime directive of the war, which was to defeat the enemy by destroying his will to fight. However, it did not go along with the basic concepts taught at ACTS and, therefore, was never actually applied in the American bombing campaign. Although in several instances civilian populations were devastated by inaccurate bomb drops, German civilians were never directly targeted by American bombing attacks.[40] From the beginning, war planners at ACTS considered attacks on morale targets risky, since the accepted theory held that only massive, sudden, and unheralded attacks would have any effect on civilian morale. "Piecemeal" attacks would only temporarily dull the enemy's morale and, in the long run, might actually help build up resistance.[41] AWPD–1, therefore, never established a specific number of targets but stated that the best course of action would be to wait until the proper psychological conditions existed and then divert the entire bombing effort to the purpose.[42]

The secondary targets proposed to assist in accomplishing the main efforts of the bombing campaign concentrated on neutralizing the German Air Force. Hansell notes that planners considered the German Air Force a primary target throughout the entire planning phase, even though AWPD–1 officially listed "the German fighter force as an intermediate objective carrying 'overriding priority.'"[43] This category included aircraft factories, aluminum plants, magnesium plants, and engine factories in both AWPD–1 and AWPD–42, but the COA eliminated magnesium and aluminum plants in the list of priorities used to develop the combined bomber offensive. Hansell acknowledged that AWPD–1's drafters based their strategic thinking on the "growing experience with the fighting capability and strength of the German Air Force, coupled with knowledge gained from covert sources of the expansion pro-

gram being undertaken in the construction of German fighters."[44] This type of thinking led to the emphasis on attacking the enemy air force.

The German combat estimate of 1 September 1939 did not present exact figures on the production capacity of aircraft industries in Germany, but estimates based on the previous year's output established that Germany could produce between 9,000 and 10,000 military and commercial airplanes in 1939. Additionally, in case of an emergency, aircraft factories could produce an additional 1,500 complete aircraft and attain a monthly production rate of 5,000 per month six months after the emergency, and 6,000 per month after a year.[45] These estimates clearly indicated the Allied need to concentrate on aircraft factories within the German homeland. Although most of the known assembly plants were well dispersed, some of the older plants used to assemble aircraft were well known and located only 500 to 700 miles from Great Britain. The total number of targets was not readily available, but AWPD–1 designated 18 of the principal known assembly plants as prime targets.[46]

Overall, the German Air Force did not present a very promising target at the outbreak of hostilities. Nevertheless, its elimination was essential to achieve numerous other objectives, such as clearing the way for an eventual land invasion. AWPD–1 estimated that there were approximately 500 bases in west Germany and the occupied territories that were provided with "exceptionally strong light flak defenses."[47] The plan assumed that the Germans had dispersed the aircraft—generally about a mile from the landing areas for the bombers—and provided each airplane with individual protection in the form of a revetment and concrete taxiways, with the entire system carefully camouflaged. Regardless, air-war planners consistently considered the German Air Force a primary target, and they recommended it as a primary target of opportunity whenever possible.[48]

AWPD–1 listed diversionary bombing attacks as secondary missions that could assist in accomplishing the main efforts of the bombing campaign. These alternatives included attacking such targets as submarine bases, surface seacraft, and assorted "invasion" bases. In the end, however, the planners decided that diversionary attacks would best be left to other Allied powers, such as Great Britain.[49] This decision went along with doctrine taught at ACTS. In a speech on "The Principle of Objective," Hansell stated that the selected targets should make the maximum contribution toward the purpose of the offensive. The advantage of using an offensive doctrine was that it kept an offensive force from wasting time on targets that did not contribute directly to the war effort. It also ensured against neglecting more fruitful targets because of a hasty conclusion or inference suggesting that a particular mission could not be accomplished. Offensive doctrine also supported a conclusion made by the COA during the war, which stated that optimal results could be obtained by causing a high degree of destruction in a few really essential industries or services rather than causing a small degree of destruction in many industries.[50]

A good portion of the theory that went into the development of AWPD–1 came from observation of industries deemed important in time of war. Hansell's description of how observations on the home front during peacetime helped set the pattern for US strategic doctrine throughout the war shows this factor clearly:

We discovered one day that we were taking delivery on new airplanes, flying them to their points of reception, removing the propellers back to the factories, and ferrying out additional airplanes. The delivery of controllable pitch propellers had fallen down. Inquiries showed that the propeller manufacturer was not behind schedule. Actually, it was a relatively simple, but highly specialized spring that was lacking, and we found that all the springs made for all the controllable pitch propellers of that variety in the U.S

came from one plant and that that plant in Pittsburgh had suffered from a flood.[51]

This observation led Hansell and the other planners to conclude that the loss of one specialized item, such as the spring, could have a tremendous effect on industrial output in time of war and could ground airplanes just as effectively as if enemy forces had shot them up or if enemy bombs had destroyed the factories.

Hansell notes that, "by the end of the war, the U.S. Air Forces had flown 755,000 bomber sorties and dropped some 1,410,000 tons of bombs." Almost half of this tonnage fell "on the selected targets of the combined bomber offensive."[52] This total was greater than the estimates in AWPD–1 for a number of reasons. For one, the developers of AWPD–1 overestimated the effect of bomb damage and underestimated the Germans' ability to repair damaged targets. German fighters, antiaircraft artillery, and weather complications impaired bombing accuracy as well.[53] Craven and Cate report, however, that "the selection of target objectives was almost identical with that suggested by the postwar analysis of the United States Strategic Bombing Survey—which is to say that, if the analysis was well founded, the program suggested in 1941 was more realistic than that which was later followed."[54]

Hindsight shows clearly that several other flaws existed in the plan. Actual experience proved that the forces allocated for strategic defense in the Pacific were inadequate and those for hemispheric defense too abundant. The assumed ability of air power alone to defeat Germany proved unfounded as well. However, when viewing AWPD–1 solely as a guide for the strategic bombing of Germany, one must concede that it is a remarkable document. And, if the planners had more accurately predicted the Allies' future ability to develop escort fighters, the document could have been even more successful.[55]

AWPD–1's success is often gauged in terms of how well it worked under the circumstances of World War II, but it can also be gauged in terms of the effects that it had on current Air Force doctrine. Transposing the effects of conventional strategic air warfare against Nazi Germany into today's environment is not easy, but modern strategists can learn a number of lessons from such a comparison.[56] Today's environment is, of course, highlighted by the presence of advanced nuclear weapons, and the Air Force has modified its strategic bombing plans to accommodate this fact. However, if the United States were faced with selecting a new set of targets to be destroyed by conventional means, the doctrine used in AWPD–1 would be extremely useful in determining the requirements for such a modern air-war plan. And, with the presence of such factors as the Intermediate-range Nuclear Forces (INF) Treaty and the growing pressure for mutual nuclear disarmament between the United States and the Soviet Union, such a comparison might prove more than just an item of passing interest.

The supporting structure of the Soviet Union is by no means identical to that of Nazi Germany, but its reliance upon major industrial systems—such as electric power, transportation, fuel sources, and certain arsenals and factories—is at least similar.[57] So it is conceivable that, by using current aircraft and contemporary bombs, modern air-war planners could develop a conventional strategic bombing campaign against the Soviet Union that would closely resemble AWPD–1 in its basic structure. The difference of most significance, of course, would be the massive Soviet air defense.[58] But, putting aside the numerous details and statistics that separate the two scenarios, one must acknowledge the basic fact that eliminating the enemy's will to fight is the key to winning any war.[59] And AWPD–1's basic doctrine rests on that principle.

The Army Air Forces' official historians, in discussing the genesis of AWPD–1, noted that "it was not an American tradition to enter a war with a carefully conceived strategic concept. For once, in this

respect, the nation was prepared."[60] And, even though AWPD–1 was never intended to be put to the test as early as it was, the unpredicted attack on Pearl Harbor forced the plan into a position where its viability was soon proven. Fortunately, years of re-search and the establishment of sound doctrine by men such as Harold George, Kenneth Walker, Haywood Hansell, and Laurence Kuter provided the basis that was essential for a successful air war in Europe.   □

Notes

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4. Barry D. Watts, *The Foundations of U.S. Air Doctrine: The Problem of Friction in War* (Maxwell AFB, Ala.: Air University Press, December 1984), 22.
5. Donald Wilson, "Origin of a Theory for Air Strategy," *Aerospace Historian* 18 (March 1971): 19.
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15. Thomas H. Greer, *The Development of Air Doctrine in the Army Air Arm, 1917–1941* (1955; reprint, Washington, D.C.: Office of Air Force History, 1985), 123.
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17. Air War Plans Division—Plan 1, vol. 2, tab no. 1, 1-2, Special Collections, United States Air Force Academy Library (hereafter cited as AWPD–1).
18. Harold L. George, "The Principles of War," lecture at the Air Corps Tactical School, Maxwell Field, Alabama, 1934–1935, Hansell Collection, United States Air Force Academy Library.
19. AWPD–1, vol. 4, tab no. 2, 4.
20. Ibid., vol. 2, tab no. 1, 3.
21. George, "Principles of War."
22. AWPD–1, vol. 2, tab no. 1, 3.
23. Robert M. Webster, lecture at the Air Corps Tactical School, Maxwell Field, Alabama, 1936–1937, Hansell Collection, United States Air Force Academy Library.
24. Estimates at the time predicted that 20 percent of German electricity was produced at Leipzig, 20 percent in the Ruhr, and 20 percent in southwest Germany. Two-thirds of the entire output was located somewhere in the range of 45 targets. Haywood S. Hansell, Jr., "Comments and Criticisms Pertaining to the American Strategic Air Plans and Applications in the Air Offensive against the European Axis Powers," Hansell Collection, Addendum 1, USAF Academy Library, 748.
25. Hansell, *Air Plan*, 148.
26. Ibid., 161.
27. Maj Gen Haywood S. Hansell, Jr., USAF, Retired, interview with author at United States Air Force Academy, 6 April 1988.
28. Hansell, *Air Plan*, 161.
29. Hansell, "Development of U.S. Concept."
30. George, "Principles of War."
31. AWPD–1, vol. 2, tab no. 1, 4.
32. Ibid.
33. Ibid., 5–6.
34. Ibid., 6.
35. Hansell, "Development of U.S. Concept."
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37. Maj Gen Haywood S. Hansell, Jr., USAF, Retired, United States Air Force Academy oral history no. 89, by Maj James Boyles, 19 April 1967, 17, Special Collections, United States Air Force Academy Library.
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43. Hansell, *Air Plan*, 159.
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46. AWPD–1, vol. 2, tab no. 1, 9.
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50. Hansell, "Development of U.S. Concept."
51. Ibid.
52. Hansell, *Air Plan*, 201.
53. Ibid.
54. Craven and Cate, 150.
55. Hansell, oral history interview, 23.
56. Papers of Maj Gen Haywood S. Hansell, Jr., USAF, Retired, and Col Haywood S. Hansell III, USAF, Retired, Special Collections, United States Air Force Academy Library, 31.
57. Ibid.
58. Ibid., 36.
59. General Hansell and his son analyze how today's bombers might do against modern industrial networks by "refighting" the air war against Germany in a set of papers kept in the Hansell Collection, United States Air Force Academy Library.
60. Craven and Cate, 150.

SPRING 1989

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for his article

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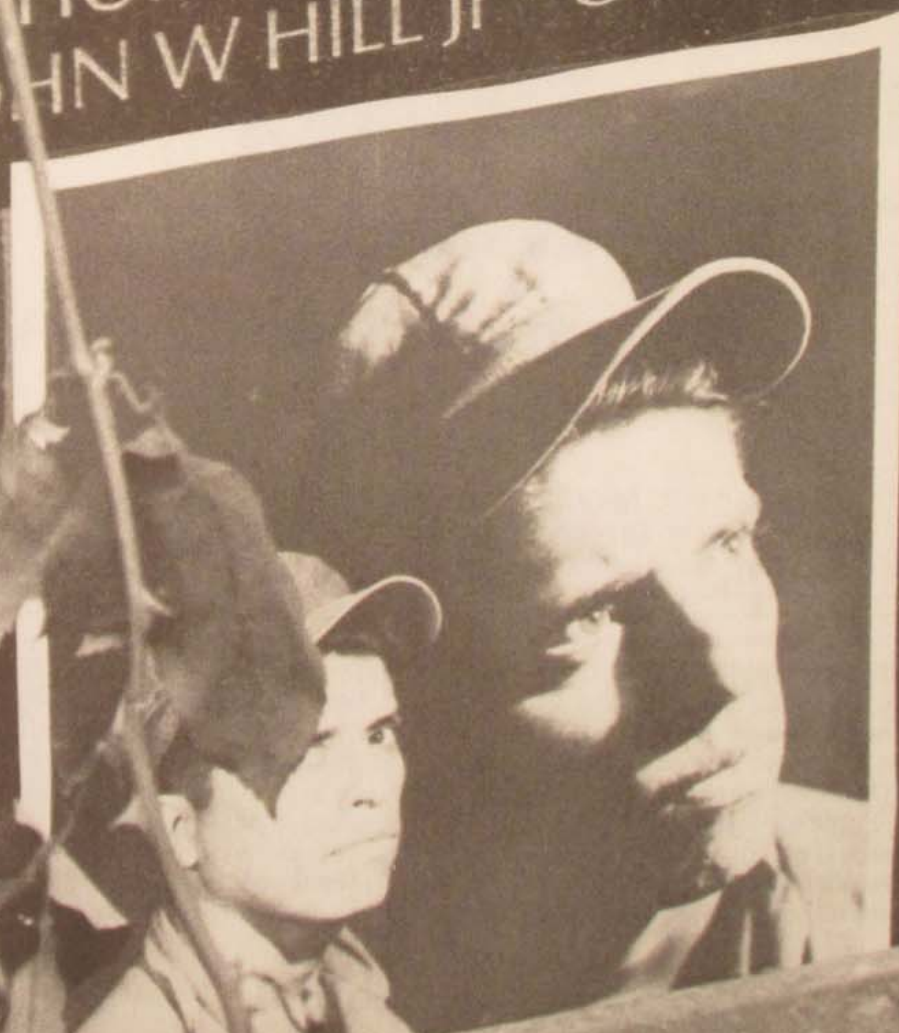
THE RIGHT REACTION

A Consideration of
Three Revisionists

Maj Earl H. Tilford, Jr., USAF

NEARLY 15 years have passed since helicopters hauled the remnants of America's military and embassy staffs from Saigon in ignominious defeat. During that time, historians, political scientists, sociologists, and soldiers have debated the war and its lessons. The debate has, with time, become less acrimonious but no less indicative of the divisions that split the nation during the war.

Then, as now, that cleavage tends to be along politically ideological lines, dividing into liberal (or dovish) and conservative (hawkish) points of view. From the mid-1960s until the early eighties, the more dovish interpretations favored by the political Left dominated Vietnam scholarship. While the Left has never been unanimous on any issue, it generally held that the Vietnam War was either a mistake or miserably run. Toward the center, mainstream liberals argued that the war resulted from misguided but noble aspirations gone astray. Toward the Left fringes, the radicals held that Vietnam issued from the degeneration of a capitalist society grasping at neo-imperialism and that a cruel technology of destruction had been unleashed on the peaceful and peace-loving people of Vietnam to benefit a corrupt industrial complex and to edify military bureaucracies. As the war continued and the frustrations increased, the arguments moved from the middle toward the fringes, but the Left's radicals never dominated the scholastic community or its interpretations, even at the height of the antiwar movement.

In the late 1970s, a conservative point of view began to emerge, eventually to be dubbed "revisionist" by many leftist scholars. Guenter Lewy, University of Massachusetts professor of political science, published *America in Vietnam* in 1978.[1] He held that, while American policy in Vietnam might have been misguided, it was not evil and that the American military fought honorably and well, given the constraints of a flawed strategy. It became respectable to interpret Vietnam from other than the antiwar perspective, and since 1978 what is now called the revisionist movement blossomed. Like the earlier leftist interpretations, the revisionists are diverse and often polemical, but they cannot be tarred with a single brush.

Conservative revisionists, like their dovish counterparts, run the gamut from a

Strikes by F-105 aircraft, such as this one on a military barracks northeast of Dien Bien Phu, were controlled by higher headquarters personnel who didn't understand the environment in Vietnam. As a result, numerous aircraft were lost, according to Col Jack Broughton, the author of Going Downtown.

heavy concentration of centrists to the re-actionary fringe, where one finds writers like Adm Ulysses S. Grant Sharp who, in 1978, published *Strategy for Defeat*,[2] which blamed policies devised by Secretary of Defense Robert S. McNamara for America's defeat in Vietnam. Though extreme, men like Admiral Sharp and other retired senior officers set the tone for the right-wing revisionists to follow.

The bellwether of the revisionist school, however, is Col Harry G. Summers, Jr., who published *On Strategy: A Critical Analysis of the Vietnam War* in 1982.[3] At first glance, Summers' appraisal of the war seems critical, but on closer examination the Army's brass decided that it reinforced traditional concepts of warfare and ought to be read by every officer over the rank of captain. Furthermore, *On Strategy* has become the bible of the revisionist movement, and Summers has emerged as a leading prophet.

Summers' central thesis was that a lack of understanding of the fundamentals of military theory and strategy, and a major disjunction in the relationship between military strategy and national policy fostered a flawed approach that ultimately led to America's defeat in Vietnam. He presented what has become the classic paradox of the Vietnam War: that the American forces won all the battles but still lost the war. Summers concluded that defeat was unnecessary and that if civilian *as well as* military leaders understood traditional concepts of military strategy, the United States would not have squandered its might and spilled the blood of its young men in a misguided effort against a secondary guerrilla force in South Vietnam. By indicting generals along with civilian leaders, Summers moved away from the simplistics of U.S. Grant Sharp and, coincidentally, stimulated a revival in the study of military history and strategy at the Army War College and Army Command and General Staff College.

Summers became the US Army's version of Yevgeny Yevtushenko, the Soviet house

dissident whose critiques are institution-
ally acceptable if occasionally painful. In
effect, Summers' thesis was welcomed, for
it vindicated the Army's traditional ap-
proach to conventional war. Furthermore,
it provided the revisionists with a group of
shared assumptions. First among these as-
sumptions was the concept that North Viet-
nam was behind the insurgency in South
Vietnam and the war was, therefore, more
conventional than revolutionary. Second,
because the war (as they saw it) was con-
ventional, it could have been won by doing
what the Army along with the rest of the

*In his book on Vietnam, Norman Hannah contends that
the United States failed to understand the conventional
nature of the war, thereby allowing North Vietnam to
"invade" South Vietnam via the Ho Chi Minh Trail (right).
Hannah maintains that the trail was the tactical linchpin
in North Vietnam's strategy. Lt Gen Phillip Davidson sug-
gests that North Vietnam's General Giap was a military
genius, but Giap's strategy for a major defeat at Khe Sanh
(below), creating an American Dien Bien Phu, was a failure.*

American military establishment does best—employ massive firepower to take and hold landmasses or specific geographical points as steps toward gaining the victory that they believed would accrue when the enemy's army is engaged and destroyed. After all, if you grab them by the ears, their hearts and minds must follow. Summers' formula enforces the territorial perspective. The revisionists generally believe that the war could have been won militarily if an Army thrust across the Ho Chi Minh Trail had been coupled with a Marine amphibious hook into North Vietnam at Vinh. An "unleashed" Air Force, meanwhile, would have closed Haiphong Harbor and the rail and highway routes leading into China and, perhaps, destroyed the dike system along the Red River. If these things had been done, many conservatives and revisionists maintain that victory was possible.

Invasions of Laos and North Vietnam, bombing the dikes . . . this would have meant war. Bingo! Third, the United States needed a declaration of war to focus the energies and reinforce the commitment of its people. Additionally, a declaration of war would have cleared the way for wider military action to conclude the conflict quickly. With a formal declaration of hostilities, the press could have been censored, the draft law rewritten and made fairer, and the shenanigans of some peace activists, like trips to North Vietnam, would have been legally treasonous.

Three recent books argue variations of these themes. Norman B. Hannah, a retired foreign service officer, develops the territorial theme in *The Key to Failure: Laos and the Vietnam War.*[4] Hannah argues that the Ho Chi Minh Trail was the tactical linchpin in North Vietnam's strategy and that when the United States signed the *Declaration and Protocol on the Neutrality of Laos* on 23 July 1962, it foreclosed on its chances for victory in South Vietnam by predestining itself to strategic failure. Laos was supposed to be neutralized by these accords, and all outside parties were to withdraw

their forces. Hannah makes the point that, while most American advisers and military personnel assigned to Laos (over 650) left, thousands of North Vietnamese troops remained in eastern Laos to develop and maintain the Ho Chi Minh Trail. By not objecting, Washington tacitly agreed to this violation, and covert operations—which from 1962 until 1965 dominated the United States' tactical approach to the trail—amounted to little more than harassment. In effect, the Geneva agreements of 1962 provided Hanoi with a free hand to develop a valuable logistical pipeline to the South while putting Washington at a strategic disadvantage, in that South Vietnam was laid open, as Hannah states, "to a slow invasion masked as an insurrection."[5]

Like Summers, Hannah contends that American forces should have been sent into Laos to close down the Ho Chi Minh Trail. But, according to Hannah, fear of escalating the war prevented Washington from embarking on such an adventure. The American military, for its part, was dominated by generals and admirals who adhered to the "no more Koreas" syndrome, holding that the United States should not become involved in a major land war in Asia. Some argued against the invasion of Laos, contending that it would take seven to eight divisions to close the trail. What Hannah does not recognize is that many generals, like their civilian superiors, never really believed that closing the Ho Chi Minh Trail with a blocking force was necessary. Led by the US Air Force, they turned to high technology in search of that silver bullet capable of working strategic and tactical magic. The Igloo White sensor system, which the Air Force started deploying throughout the trail complex in 1967, was used to monitor traffic so that gunships could be directed against trucks as they made their way southward. Furthermore, during the three years of Rolling Thunder—the aerial campaign directed against North Vietnam from March 1965 through October 1968—Laos took a backseat in sortie allocation. But, when President Johnson cur-

tailed the bombing on 31 March and then ended it on 31 October 1968, additional planes became available for use in Laos. Two weeks later, the Air Force began Operation Commando Hunt, a series of aerial campaigns to interdict the flow of men and supplies to the People's Army of Vietnam (PAVN) and Vietcong units fighting in South Vietnam. This argument, focusing as it does on the Ho Chi Minh Trail, is fundamental to the revisionists' "territorial approach" in that the trail was a physical and geographical conduit through which South Vietnam was *invaded* by the North's armies. As such, this argument works against the liberal contention that the war in South Vietnam was a revolutionary or civil war and the United States therefore had no business intervening. Furthermore, because it focuses on geography as the key to a conventional invasion, the argument implies that more or less traditional forms of force application would have been relevant.

Lt Gen Phillip B. Davidson's *Vietnam at War: The History, 1946–1975* is a comprehensive, well-constructed history.[6] Davidson was chief intelligence officer for Gen William C. Westmoreland and Gen Creighton W. Abrams. A sophisticated scholar-soldier with a grasp of the complex relationships between strategy and national policy, Davidson is a far cry from U.S. Grant Sharp with his simplistic bombast aimed at Robert McNamara and other civilians perceived as interfering in military affairs.

Davidson focuses on Gen Vo Nguyen Giap through three decades of war. That makes sense because Giap was, after all, there at the founding of the Vietminh in 1941, the defeat of the French in 1954, and was still serving as minister of defense when the final victory came in 1975. While Davidson contends that Giap is a giant among history's greatest captains, he also challenges conventional wisdom on several issues. Many have argued, for instance, that the siege at Khe Sanh was a feint on Giap's part to divert attention while the Vietcong

and PAVN positioned themselves for the Tet offensive. Davidson claims that this is nonsense. Giap was too good a general to tie down two or three divisions, numbering upward of 40,000 men, to divert four battalions of US Marines. Furthermore, he paid too high a price in casualties from the pounding those divisions took while dug into static positions around Khe Sanh. Davidson holds that the siege at Khe Sanh was phase one in a three-part plan. The initial phase diverted attention from preparations for an attack on the cities. This attack was supposed to be a prelude to phase two: the disintegration of the Army of the Republic of Vietnam (ARVN) due to the ferocious, concerted Vietcong and PAVN offensive. When the ARVN collapsed, Giap reasoned (being a good Communist) that the people would rise up against the Nguyen Van Thieu government and its American puppet masters. Then, according to this logic, the United States would have no alternative other than negotiate its way out of its coastal enclaves. During those negotiations, phase three would be consummated when the PAVN overran Khe Sanh. Hopefully, the capture of 5,000 US Marines would have the same demoralizing effect that the fall of Dien Bien Phu had had on the eve of the Geneva Conference of 1954.

The Tet offensive failed, however, because Giap was wrong in his major assumptions. The ARVN did not disintegrate but fought better than it ever had—better, Davidson claims, than it would ever fight again. The people did not join their would-be liberators but fled from the Communists to the safety of government-held areas. Finally, American firepower devastated the Vietcong in and around the cities as well as the PAVN units laying siege to Khe Sanh. But, according to Davidson, the real irony is that Giap hated this plan. He had inherited it from Gen Nguyen Chi Thanh, a long-time rival who was killed in a B-52 strike in South Vietnam in July 1967. Davidson argues that Giap considered the Tet offensive a diversion from the true course of revolutionary warfare based on a pro-

tracted war using guerrilla tactics. Here Davidson departs from the mainstream of revisionism, but he does not go far enough. He ought to consider the arguments of those people who hold that it was the protracted guerrilla war that ultimately defeated the United States by sapping the national will while bleeding the nation's youth in a seemingly endless and pointless conflict.

Unlike many revisionists, Davidson holds that "the strategy of revolutionary war was the key [Davidson's emphasis] ingredient of the Communist victory."[7] Like a revisionist, however, he contends that the use of overwhelming military force would have brought a quick victory. Then, within three paragraphs, Davidson argues that America's greatest failing was that soldiers and statesmen alike failed to understand the kind of war on which the United States had embarked and that "the American leadership grasped only vaguely the broad principles of revolutionary war and never understood its nuances."[8] Rather than labeling Davidson an ideological schizophrenic, it might be better to consider him intellectually eclectic and mentally nimble enough to reach conclusions outside the parameters of neatly defined ideological biases that too often skew scholarly interpretations.

Hannah's *Key to Failure* and Davidson's *Vietnam at War* are generally convincing, but the authors do not address *why* the American generals and their civilian leaders failed so completely when it came to devising an appropriate strategy. Retired Air Force Col Jack Broughton, author of *Going Downtown: The War against Hanoi and Washington*, is not as sophisticated as Hannah and Davidson in presenting his arguments, but—perhaps more perspicaciously than either of them—he gets to the heart of the matter: "The objective of our effort in Southeast Asia was to hurt Ho Chi Minh, and thus make him . . . do the things we considered to be in our national interest."[9] And Broughton was at the tip of the lance, "going downtown" to bomb Ha-

noi and Haiphong in his F-105 Thunderchief fighter-bomber.

Going Downtown, like *Thud Ridge*— Broughton's first book published two decades ago—reflects the bitterness of one who feels very keenly that he and his comrades were betrayed. The sense or concept of betrayal is not unusual in literature about the Vietnam War, but in the revisionist genre, it is almost exclusively focused on civilian officials, antiwar activists, and selected members of the press. While Broughton probably would not disagree with most revisionists on this particular pantheon of villains, he focuses much of his vituperation on senior Air Force officers and their courtiers who "would not listen to those who were doing the fighting."[10] According to Broughton, the problem was not only that the strategy behind Rolling Thunder was flawed but also that Air Force leadership, dominated as it was during the Vietnam War by bomber pilots whose thinking had not advanced beyond World War II and massive bomber raids over the Ruhr Valley, was out of touch with the war at hand. Broughton subjects Gens John D. Ryan, James Wilson, and John Vogt to the kind of criticism usually reserved for Secretary McNamara.

Broughton felt betrayed by Air Force leaders who did not speak out forcefully enough against the needless slaughter of aircrews who flew into North Vietnam on the wings of a prosaically conventional doctrine devised to bomb Nazi Germany. He faults the Air Force's leadership for stifling creativity and innovation: "It was awful enough to have all those operationally uneducated folks in Washington telling us which way to turn, but then we, our own air force, went and did it to ourselves by discouraging new ideas."[11]

Of the three authors, Broughton may have the best understanding of what went on and what went wrong in Vietnam. The problem with people who argue from either the liberal or conservative perspective is that they too often become polarized around polemics. Each of these authors

goes beyond that and reminds us that the Right, like the Left, is hardly monolithic. That is as it should be, given the enormous complexity of the issues attendant to the Vietnam War. Nevertheless, the revisionists and the liberals could learn a great deal if they would modulate the rhetoric and consider alternative points of view outside the confines of preconceived ideological notions. Revisionists, for instance, could learn from Professor Loren Baritz, who—in his cultural history of the Vietnam era, *Backfire*[12]—makes the point that an overwhelming sense of hubris led Americans, including members of the military, to the notion that as a nation we were both righteous and invincible. The Left would do well to consider the works reviewed here because they offer insights into a thinking process that not only applied during the Vietnam War but also continues to dominate certain segments of policy and strategy formulation. Scholars, both from the Right and the Left, need to move toward an approach to the Vietnam War that will contribute to a better understanding of what went on and what went wrong during that terribly divisive era. Only an objective appraisal of the many facets of that war will lead to a better understanding of the dynamics of that conflict; and to arrive at that point, scholars ought to abandon the rhetoric of the 1960s, from whatever quarter, as they search for truth and understanding in the late eighties and nineties.   □

Notes

1. Guenter Lewy, *America in Vietnam* (New York: Oxford University Press, 1978).

2. Adm Ulysses S. Grant Sharp, *Strategy for Defeat: Vietnam in Retrospect* (San Rafael, Calif.: Presidio Press, 1978).

3. Col Harry G. Summers, Jr., *On Strategy: A Critical Analysis of the Vietnam War* (Novato, Calif.: Presidio Press, 1982).

4. Norman B. Hannah, *The Key to Failure: Laos and the Vietnam War* (Lanham, Md.: Madison Books, 1987).

5. Ibid., 199.

6. Lt Gen Phillip B. Davidson, *Vietnam at War: The History, 1946–1975* (Novato, Calif.: Presidio Press, 1988).

7. Ibid., 799.

8. Ibid.

9. Jack Broughton, *Going Downtown: The War against Hanoi and Washington* (New York: Orion Books, 1988), xiv.

10. Ibid., xvi.

11. Ibid., 105.

12. Loren Baritz, *Backfire: A History of How American Culture Led Us into Vietnam and Made Us Fight the Way We Did* (New York: W. Morrow, 1985).

Ricochets

can muster in support of independent operations.

Since World War II we have steadily backed away from the crusading zeal and visionary insights of Giulio Douhet, Billy Mitchell, and George Kenney. We have produced two generations of air officers who somehow believe that strategic air power was disproved during the European campaign. These same officers fail to appreciate the decisive role of air power in the Pacific theater. Even among the shadows of gloom that pervade our Vietnam experience, Linebacker II stands out as a brilliant vindication of air power, and—most recently—Eldorado Canyon achieved strategic results against terrorism. Yet many seem to find bizarre comfort in accepting the support role, and in so doing they deprive the nation of its most responsive capability.

It is time for us to reaffirm and reassert the truths that underlie our charter. These truths cannot be found in follow-on aircraft or Program Objective Memorandum (POM) cycles. Neither are they tied to controversies like follow-on forces attack (FOFA), close air support (CAS), or battlefield air interdiction (BAI). Rather, they exist in the combat experiences where air power was employed with—and often without—success. They exist to be learned from and to be developed into a cohesive strategy that can accommodate the world as it is and as it will become. It is time that we had an air power strategy.

Lt Col Thomas M. Kearney, USAF
Headquarters USAF, Washington, D.C.

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SPEAKING OUT ON STRATEGIC LITERACY

I read Colonel Donovan's "Strategic Literacy" (Winter 1988) with keen interest. As an aspiring strategist author, I too have endured the security/policy review process. My experiences and related frustrations in that process have differed from those observed by Colonel Donovan, and I have come to suspect that the primary problem regarding "thought control" does not necessarily lie with the Air Force part of the system.

As both a junior officer and then as a civilian employee of the Air Force, I have found my superiors to be either supportive of or at least tolerantly indifferent to my attempts at writing. You cannot realistically ask for much more than that, especially out in the trenches. Nor has the Air Force part of the review process generally been unduly severe. As a rule, when Air Force reviewers have had an objection, they have generally been willing to be specific about why they objected. It was generally related to factual/security matters, and we could work out a mutually acceptable compromise (there is at least one advantage to being in Washington, D.C.). I have found that the true intellectual constipation really takes place at the Office of the Secretary of Defense (OSD) review level. There they do indeed seem to have a dismal tendency to believe they have an unlimited right to censor anything you say, especially if it has something to do with policy or is controversial. Unfortunately, there isn't much the Air Force can do about that.

In conclusion, I suggest that the situation is both less bad and worse than Colonel Donovan suggested. The reason more people don't write for publication has much less to do with their being intimidated or frustrated by the gauntlet of security and policy review than it has to do with their simply not having inclinations in the directions of serious scholarship. I for one am not optimistic about the Air Force being able to change that.

Capt Thomas R. McCabe, USAFR
Lorton, Virginia

Lt Col G. Murphy Donovan's recent essay, "Strategic Literacy" (Winter 1988), presents an Orwellian interpretation of the Air Force security (to include policy) review process and a novel approach to a serious issue. The author's comments lack a definite understanding of what, in fact, security review is all about.

While AFR 190–1, *Public Affairs Policies and Procedures*, directs that information cleared for public release be consistent with security and policy requirements, it also includes a mandate to clear as much information as possible, as quickly as possible. With this goal in mind, our reviewing officials approach each case with the belief that all or as much as possible of the information submitted will be cleared.

Apparently, the experts with whom our reviewing staff consults during the review process make up Colonel Donovan's "legions of thought

police.'" In developing the Air Force position on a case, we must call on any number of experts for comments and advice. Resolving problems is our job; therefore, out of courtesy to reviewing experts, we don't offhandedly release their names. If authors don't understand the reasons for security or policy changes to their material, we ask those who made the amendments/recommendations for permission to release their names or ask them to contact the authors. To my knowledge, no Air Force member—military or civilian—has ever refused to discuss a decision with an author.

Inadvertent release of classified material is far from the "minor issue" Colonel Donovan believes it to be. It is a serious issue. People who inadvertently use classified material in their proposed speeches and writings are far from the "fools" Colonel Donovan labels them; often they are leaders at the highest levels. In many cases, it is difficult to divorce classified material from unclassified. Combining two pieces of unclassified information can sometimes add up to classified. In other cases, projections and predictions are right on the money and must be amended or deleted to avoid a security compromise.

Let's look now at the other side of the security review coin—policy. The Department of Defense directive that governs the function (DODD 5230.9) states that material submitted "shall be cleared for public release only after it has been reviewed and necessary amendments made to ensure that it does not compromise classified . . . information, *and that it is consistent with established DOD and other U.S. Government policies and programs.*"

Policy amendments are hard to swallow, even for us in security review. Sometimes even the very reason for the policy amendment is classified. Many of the policy amendments to cases submitted for review are based on the following considerations:

Accuracy—information cleared for public release must be accurate.

Balance—when writers treat topics about which other services or agencies may hold differing views, it helps to make presentations as balanced as possible.

US policy—the most troublesome areas are those usually referred to as foreign policy or foreign affairs. Air Force material must conform to the approved policies of the president, Department of State, Department of Defense, and the Air Force. This is not to say that such

policies can never be contested. When the author expresses disagreement, the reader should be able to distinguish policy from the author's opinion.

Some publications carry an overall disclaimer stating that the views expressed are those of the author(s) and are not necessarily representative of the official policy of the Air Force. Although acceptable in some instances, it's not always the answer. Why not?

It's virtually impossible to separate the identity of the author from his or her official position. The higher the rank and position, the less credible the disclaimer. Our allies and adversaries are inclined to accept the statements and writings of armed forces members as signifying some body of belief within that organization. So, while disclaimers are occasionally made a condition of clearance, such a gesture often means little in a practical sense.

Authors who take exception to security or policy amendments have recourse to an appeal process that often can be lengthy, but we encourage all who disagree with amendments to pursue an appeal.

There is no police function involved with security review. Regulations require the submission of material for review, and authors who choose not to do so are on their own. When the rules are followed, the Air Force, while not always endorsing authors' works, will back up their right to present cleared material in public forums. Keep in mind that official "clearance for public release" means only that the submitted document has no security or policy discrepancies. Actual release of the material is a matter that must be determined by the author, perhaps in coordination with his or her chain of command.

Finally, we're on your side. We understand that publishing and speaking are expected means of building credentials, and we do all we can to obtain clearance for your work. Out of 2,444 cases reviewed in 1988, 43 were totally denied clearance—more than 98 percent of our cases were cleared. This figure indicates that the supposedly stringent security review requirements are hardly a convincing argument for not pursuing creative endeavors.

June F. Forte
Deputy Chief, Office for Security Review
Office of Public Affairs
Washington, D.C.

I had stopped reading the Air University journals some time ago because the quality of argument hardly made it worth the effort. Yet, the other day I ran across a reprint of one of your essays ("Strategic Literacy," Winter 1988) in the *Current News Supplement*. I was astonished! Colonel Donovan's lucid treatment of the problem of strategic literacy is perhaps the best treatment of the subject that I have seen to date. The writing is crisp, direct, and wry. If you can bring the rest of your authors up to this standard, you might bridge some of the literacy gaps that Donovan describes so well.

R. Huschke
Washington, D.C.

Terrific article! Now take it one step further by printing articles on thinking war—air base ground defense, air defense, and so on. Concentrate on what the airmen (generically) left on the ground will be doing while the fliers are fighting the AirLand Battle. It's time to supplement philosophizing with applications.

Capt Murry B. Moskowitz
Brooklyn, New York

Colonel Donovan hit the nail on the head in his exposé on the military's censorship of freethinking in its officer corps. In 1982 my research project at Air Command and Staff College was an article for publication on the US Air Force's "up-or-out" promotion philosophy. The article was sponsored by the editor of *Air University Review* and was an objective evaluation of the system. It was, however, not released for publication by the "gods" in the Pentagon because it was "too critical of the Air Force promotion system." Another notch in the handle of the military censorship pistol! Donovan's article made it through, which is a healthy sign that the situation has improved.

Lt Col Milton W. Price, Jr., USAF
Canberra, Australia

ON SPACE DOCTRINE

Colonels Myers and Tockston's article "Real Tenets of Military Space Doctrine" (Winter 1988) makes an important contribution to the ongoing discussion of space doctrine. By differ-

entiating between the capabilities of space forces and air forces, they lift the debate to a new level of realism. For this reason I am reluctant to criticize their work, but it appears to me they have significantly understated the vulnerabilities of our space assets. Such passages as "they can capture the high ground and elude the enemy" and "facilitate application of precise, unimpeded force on enemy targets" may be theoretically possible but seem to assume a passive enemy who makes no efforts to neutralize our vehicles. To say, as the authors do, "they can . . . penetrate geopolitical boundaries with impunity" may be true in peacetime, but will space be a sanctuary in wartime? The authors go on to assert that "space assets can provide secure, reliable communications." Can they under wartime conditions?

Later in the article the authors do suggest that "space control" is vital, but then they go on to say that "effective space control requires a global space surveillance capability." It does, indeed, but what of the other dimensions of control? Specifically, what assets will be required to defend our vehicles in space and neutralize those of an enemy? A later paragraph says, "Once control of the space environment is established, the commander in chief (CINC) can employ all the characteristics and capabilities of satellites to favorably influence the outcome of hostilities." Quite true, but what is lacking is any discussion of just how control of space is to be achieved. Without such discussion, we are not going to perfect well-rounded space doctrine. Treaty limitations and national policy may curb the development of offensive and defensive hardware, but these should be no inhibition to our professional thinking about space doctrine. I hope Myers and Tockston, along with others no less well-informed than they, will turn their attention to the pressing problem of how we may best defend our vehicles in space.

Maj Gen I. B. Holley, USAFR, Retired
Durham, North Carolina

Colonels Myers and Tockston make some acute and important observations in "Real Tenets of Military Space Doctrine" in your Winter 1988 issue. They point out that the "speed, range, and flexibility" we attribute to air power are not the important characteristics of space forces, that despite the lack of a distinct physical boundary

between air and space there is a sharp operational boundary between them, and that the term *aerospace* confounds things that are essentially different. I think they make clear fundamental points about space doctrine. However, some aspects of their doctrinal development strike me as not fitting the realities of current military space operations.

The authors seem to be writing about a vision of what space operations may one day be. They list the ability to apply unimpeded force as a capability of space forces, but no spacecraft exists that can do such a thing. In fact, the "combat" mission areas that they discuss are currently represented only by the Soviet antisatellite (ASAT). Now and probably for the next few decades, the lion's share of military space effort will be put in the "combat support" areas: *force enhancement*, meaning various kinds of support for terrestrial military forces, and *space support*, meaning operating the spacecraft that do the force enhancement. Currently, the space mission is a support mission.

The writers put more stress on the interdependence of space systems than is justified by actual experience. It is true that some linkages exist—navigation satellites getting environmental data from weather satellites and so forth—but in my experience they do not have a major effect on space operations. The linkages are no stronger than those that exist between space and terrestrial forces or among terrestrial forces, for that matter. Space systems are probably better characterized as being more independent of each other than terrestrial forces.

I think there's a tendency for space systems to operate separately if they can. The writers make much of the need for interoperable command and control, but this is more vision than reality. Some satellites share a common network of tracking stations, but this type of interoperability is pretty superficial. In day-to-day operations, each spacecraft has its own unique mission and method of operation, and there is little need to coordinate anything more than who gets to use the tracking station when. True interoperability could be useful in some circumstances, but it would lead to more scheduling difficulties, require compromises in design between spacecraft with different missions, and be seldom used.

What this means is that in a war today there would be no separate space campaign and no separate space strategy. Instead, each space system would try pretty much independently to

support the terrestrial forces as well as it could. Even if we had a US ASAT, its use would be determined by the needs of the terrestrial commanders in chief (CINCs), not by a space CINC's assessment of a space battle. This rather dull support role for space forces is very different from the centrally managed space battle that Colonels Myers and Tockston envision. Of course this could change with future technology but not necessarily in the vision's direction. For instance, if ground-to-space weapons turn out to be relatively economical and effective, satellites may survive in a war only by hiding in remote orbits.

The vision of space operations that Colonels Myers and Tockston offer is exciting and gripping, but I don't think it's real (at least not yet). I wish it were. In the meantime, we in the space business should come to grips with the doctrinal implications of our community being united not by common operations or by a common mission, but only by a common operating environment and similar technology.

Capt Roger C. Burk, USAF
Los Angeles AFS, California

Concerning the authors' claim that "real space doctrine remains unrecognized, undocumented, and unaccepted," the case is quite to the contrary. Real space doctrine is alive and well in the Organization of the Joint Chiefs of Staff (OJCS), Headquarters USAF, and the Office of the Secretary of the Air Force (OSAF). They need only contact JCS/J-3 (Space Operations and Strategic Defense Division), Secretary of the Air Force/Office of the Secretary of the Navy (OSN) and/or Headquarters USAF/XOXFD for the "current word." Having spent eight years over two tours in Colorado Springs, Colorado, space organizations, I can understand the reluctance to admit that the Pentagon understands space.

Lt Col Frederick P. Lawrence, USAF
Headquarters USAF, Washington, D.C.

I am concerned about a letter from Major Blow in the Spring 1989 edition and its criticism of a thoughtful article on space doctrine.

Both *Airpower Journal* and *Air University Review* have been excellent sources on issues of doctrine. Articles by Maj Gen I. B. Holley, Col Dennis M. Drew, and others have framed what

constitutes doctrine at various levels. They explain that doctrine is "an accumulation of knowledge which is gained primarily from the study and analysis of experience." Also, "doctrine is officially approved prescriptions of the best way to do a job. Doctrine is, or should be, the product of experience. Doctrine is what experience has shown usually works best."

The essay "Real Tenets of Military Space Doctrine" (Winter 1988) came close to capturing a doctrine based on experience. This is nothing really new, as *Air University Review*'s March–April 1986 issue contained a detailed criticism of AFM 1–1's (*Basic Aerospace Doctrine of the United States Air Force*) handling of space doctrine, entitled "How Dare They Tamper with the Sacred Functions of the Horse Cavalry?" along the same lines.

There were two points that Major Blow missed. First, the focus of doctrine must be on experience. The difficulty is not describing current practice but setting a historical basis for doctrine so the reader can understand *why* experience has led to the current state of affairs. This understanding allows a prudent extension of doctrine to guide actions based on situations not previously encountered. Such historical explanations and consequent understanding let our leadership examine the reasons that things are the way they are and see what underlying considerations must be changed in order to take new directions. Thus, since our experience leads us to understand that testing weapons on the far side of the moon would be physically very demanding, technically well beyond the ability of any nation on earth to adequately control and monitor (much less get away with), and certainly contrary to any existing doctrine of testing we know of, it is difficult to say this must be allowed for in doctrine. Such wild-eyed ideas are neither based in, nor reasonable extrapolations of experience. "Doctrinal extension does not have to be lunacy," if you will pardon the pun.

The second problem is that the letter criticizes the essay as though there were an official doctrine on space. There is none worth the paper it is printed on, but the essay in question takes an important step toward such a doctrine. We can debate meaningfully about doctrine, its contents, and its provision for the future only after our service steps up to its responsibility in space and promulgates an adequate space doctrine. "Horse Cavalry" and "Real Tenets" both point

the way, but the Air Force has been woefully remiss in not issuing an official doctrine. It makes one wonder at the utility of doctrine in the modern Air Force, if that service can have a major command for space and the nation a unified command for space, and yet not print the first word about doctrine.

The real criticism should have been, "Why are we debating each other's essays instead of a real, official Air Force doctrine on space?"

Lt Col L. Parker Temple III, USAF
Headquarters USAF, Washington, D.C.

TO FLY AND FIGHT

In the article "To Fly and Fight at the Operational Level" (Winter 1988), Colonel Possehl describes why too many (most?) officers don't "think war" on a daily basis. His essential reason is that in peacetime, war is "not immediate" and that we concentrate on the immediate things. His solution is to think war and study history but admits this may be hard to do. Similarly, in a letter to the editor, Colonel Stroud also states that "interest in and the study of the profession of arms has to be a reason for joining the Air Force. If it is not, we're attracting the wrong people."

Let me recommend an activity that serves as an excellent first course to motivating the study of war, introduces the individual to the terminology of war, gives the individual an intuitive feel for the concepts of war, and teaches one about current weapon platforms with their relative strengths and weaknesses. The activity? Wargaming. No, not the war games conducted at Squadron Officer School or the Warrior Preparation Center in West Germany. Not even the traditional war games that have hundreds of pieces to move and dozens of tables to resolve the effects of each bullet fired. Instead, look at the personal computer (PC) based war games (not the arcade games). The basic element is that the games are playable and interesting. The competitive nature of most officers is engaged by taking on the computer or fellow officers.

The second element is that the computer handles the mechanics while you concentrate on the essentials. You direct your forces using the concepts of war (e.g., surprise, maneuver, concentration, and so on). You learn quickly the strengths and purposes of a weapon system (an A-10 is great against armor but lousy as an interceptor). What you see of the enemy forces

and the results of your strategy and tactics are mediated by the computer.

A third element is that many war games are historically based. The individual learns the forces, geography, strategy, and tactics in use during a particular period. This learning is brought about through the necessity to win the battle, not through the iron-willed discipline needed to read Clausewitz (as implied by Captain Davison in his article on misreading Clausewitz, same issue).

While I have not sampled all the computer-based games, I will recommend three. The prices are cheap, most units have PCs, and a few dozen "war training" days a year is time well spent:

1. Empire, by Interstel Corporation, POB 57825, Webster TX 77598, $50. Generic war game combining air, land, and sea power. Up to three players (human or computer).

2. The Ancient Art of War, Broderbund Software, POB 12947, San Rafael CA 94913-2947, $45. Good, solid emphasis on strategy and tactics in the era of forts, swords, and bows. The manual and game teach the fundamental principles found in the *The Art of War* by Sun Tzu.

3. Gulf Strike, Avalon Hill Game Company, 4517 Harford Road, Baltimore MD 21214, $30. Present-day simulation of what a USSR-versus-United States showdown in the Persian Gulf may look like.

Capt Bruce Benson
Birkenfeld, West Germany

"To Fly and Fight" (Winter 1988) is an excellent article on the importance of knowing your enemy before waging war and the necessity of having a well-defined objective. "Clausewitz and the Indirect Approach" (same issue) is also well researched and written. More conceptual and less digital thinking will strengthen our nation's defense.

Col (Brig Gen selectee) Gerald R. Chancellor, USAF
Dallas, Texas

DEBATE ON AUTOGYROS

I read with great interest Colonel Temple's recent article "Of Autogyros and Dinosaurs" (Fall 1988). There was much food for thought there and many valid points on the relationships that should exist (but often do not) between doctrine, weapons advocacy, and the military engineer/scientist. As a sermon, it was quite good. As aviation or technological history, it was abysmally bad and could easily lead young officers to misinterpret many of the personalities and developments of that period.

Getting specific, let's first consider the two glaring faults of autogyros mentioned by Colonel Temple. These were inadequate payloads and poor/unstable handling qualities. The fact is that these were the two primary faults of virtually all the military helicopters deployed operationally prior to about 1958 (i.e., 15 to 20 years into the growth cycle of the practical helicopter). If one next asks what were the three largest problems inherent in the helicopters prior to World War II, one finds that two of the three were actually solved during autogyro research and development (R&D), while the third was not solved until the fifties. These problems deserve description.

The most important major problem of the early helicopter had to do with blade/hub mechanical instabilities, which ripped blades right off the vehicle. Losing a blade in flight is guaranteed to achieve pilot attention at least for the final seconds of his life. The Cierva work in blade articulation—providing hinges at the blade roots—was central to all later rotary-winged development, whether autogyro or helicopter. (It was also the field that paid my rent from the fifties to the seventies and is still a major field for fertile R&D today.)

The second problem concerned finding a practical means of transferring pilot commands into the rotor (i.e., achieving basic rotor control). All modern helicopters achieve this via stationary and rotating swash plates. Autogyros were instrumental in developing swash plate technology (although a few early helicopters had primitive swash plates).

The third major problem of early helicopters was that they were inherently underpowered. This last problem was solved by the introduction of turbine engines in the fifties. However, in the thirties, the autogyro (by never really hovering) *appeared to avoid* this problem.

The wise Air Corps R&D procurement officer of the twenties and thirties should have attempted to fund both concepts because there was no clear way to see then which would be successful, and the technological and engineering limitations of both concepts *overlapped*. This is in fact what did happen, and there was much cross-pollination between helicopter and

autogyro. There was also much acrimonious and bitter competition, which the American Helicopter Society indirectly acknowledges today by naming various awards after autogyro pioneers.

As for military doctrine, despite the articles cited by Colonel Temple as trying to establish autogyro doctrine, the fact is that no US military service paid adequate attention to vertical-lift vehicle doctrinal implications until *after* the Korean War. As late as Vietnam, I commented on glaring discrepancies in the US Air Force position on this in a letter to the editor of a service publication, only to have an older officer threaten my career for daring to do so. (I was then a young captain; clearly when one is on firm ground, one can ignore crank letters threatening that "you'll never see another promotion!")

In summary, the autogyro should be properly remembered as a configuration that provided much impetus to technological innovation and early research but that was supplanted by a better vehicle (the helicopter). The attempts in the later autogyros to power the rotor for "jump takeoffs" were really the admission that helicopters were a later generation of practical rotary-winged development. Remember that it is primarily in the question of whether the rotor in cruise windmilled or was powered that differentiated the autogyro and the helicopter.

Col H. Lawrence Elman, USAFR
Port Jefferson, New York

Colonel Temple Responds

It is clear from Colonel Elman's considered remarks that he has largely missed the intended message of my essay. The purpose of the essay was to illustrate the pitfalls of overselling programs and to examine the role of doctrine.

The colonel praises the essay as a good sermon; the problem is that the choir has not even come to practice, much less to learn. The essay used a compact historical example to suggest a way in which weapons acquisition can use doctrine to avoid the problems caused by overselling. Themes such as the contention of helicopters versus autogyros or late development of vertical-lift doctrine might have been interesting if space had permitted. Others may want to contribute to one or more of these issues. They, however, were not the subject of my essay. If the colonel feels it was merely a sermon, then I am

sorry he did not discern the practical application.

The autogyro struck me as a paradigm of many of the dysfunctions in systems acquisition today. The central theme was overselling a concept even after it fails to demonstrate itself. The approach was to relate flaws with the ways in which Cierva in particular and others went about their advocacy of the autogyro. Cierva was certainly a visionary and innovator, but he let his vision interfere with his impartiality, much to his discredit as a true aviation pioneer. Cierva glossed over significant deficiencies and sold what he hoped the autogyro *might* become, overlooking what it *actually was*.

The essay included a sampling of the capabilities and missions postulated to be satisfied by autogyros, derived from a variety of sources beginning with Cierva in 1928, the later Air Corps Advanced Flying School evaluation, and combat testing by the Marines in Nicaragua in the mid-1930s. Yet before demonstrating that the autogyro could fulfill *one* mission adequately or live up to any claimed capability, Cierva and others continued to add to the long list in an attempt to build a committed constituency of people who believed they needed the autogyro. Many were caught up in an aviation environment of heady proportions where new achievements came quickly, and potential seemed unlimited. Stories were enthusiastically repeated until people began to identify potential with existing autogyros, building a house of cards based on false assertions. For example, the fact Cierva crashed twice in production autogyros of his own design should be sufficient evidence that he knew the falsity of his claim that autogyros provided the ultimate answer to airplane safety. Also, he repeatedly understated costs, overstated payload capacity, and exaggerated every other metric used to evaluate the autogyro. Consequently, to say that both autogyros and helicopters had poor handling until the early 1950s completely misses the point that in spite of demonstrated poor handling and load carrying, Cierva and others claimed just the opposite was true.

The upbeat salesmanship was sufficient to outweigh the objective review of doctrinal impacts and result in the loss of funding to Brennan, de Bothezat, and other helicopter developers. Whether these other efforts would have succeeded in producing a helicopter any earlier is problematical; it is demonstrable that funding was shifted from ongoing efforts to a

program that promised more than it could reasonably achieve. The essay was not meant to denigrate the pioneering efforts of any of the autogyro developers. Cierva should be remembered as a pioneer whose contributions are undeniable, if overblown. The best testimonial to this is the admission by *U.S. Air Service* (a magazine ardent in its early support of Cierva and anything aeronautical) in its eulogy to Cierva that the autogyro was not living up to expectations.

The essay suggests that doctrine, as the distillation of lessons learned from experience, has a role in reducing the dysfunctions of overselling. Numerous articles on the role of doctrine in weapons acquisition in both *Airpower Journal* and *Air University Review* have had a similar message. Pinpointing the time when doctrine for helicopter employment was promulgated is irrelevant to the essay; the point was that some military personnel attempted to use whatever they *believed* doctrine to be in the debate. They were debating doctrinally on an aspect of aerial warfare with which no one had experience, which by definition precluded the establishment of an adequate doctrine. To that extent, I applaud the attempts of Merlin, D.IOI, and Major Hilton to use doctrine in evaluating a proposed superior weapon. I cited the doctrinal debate not as an example of promulgating good doctrine but to show that Merlin and D.IOI were arguing improperly about doctrine. Their discussion should have been more historically based, as in the case of Major Hilton, who presaged the current nap-of-the-earth tactics with his précis on a besieged R.E.8.

I can find one point of agreement with Colonel Elman regarding the late arrival of vertical-lift doctrine. The same is often true today, as when I alluded to the lack of a space doctrine despite our having operated space systems in peace, crisis, and war for over 30 years. Less time elapsed between the first flight of the autogyro (1923) and the development of the vertical-lift doctrine (1953) than we have operated in space, and we have been far more successful in space operations than the autogyro ever was. I submit that the promulgation of a vertical-lift doctrine actually took place comparatively soon after the development of *practical* helicopters in the 1940s. The essential point remains that much can be learned from the history of the autogyro about how doctrine can be used to help acquire the superior weaponry on which our modern armed forces depend.

I must challenge the assertion that the essay was not accurate aviation history. That it does not agree with Colonel Elman's understanding of the development of the autogyro I have no doubt; it did not fit my preconceived notions either. However, I followed accepted historical research procedure and based the essay on several years of research, using primary sources. In researching every available source on autogyros, I saw that we later generations may have failed to appreciate the mind-set and conditions under which autogyros were sold. In fact, primary sources paint a very different picture than do modern sources. While initially enthusiastic, all of these primary sources became pessimistic about autogyros by the mid-1930s. The general trends depicted are true to the views of the sources of the 1920s and 1930s. If this is not sufficient, my research is documented in the essay and is available for others to examine.

Lt Col L. Parker Temple III, USAF
Headquarters USAF, Washington, D.C.

SPETSNAZ—ROUND TWO

I read with interest the exchange of views on Soviet Spetsnaz by Captains Campbell and Hitchens. In my opinion they are both partially correct and partially incorrect. As is often the case, the major problem stems from faulty definitions and misunderstanding of the terms. As Captain Hitchens notes, *Spetsnaz* means "special designation." However, the Spetsnaz troops are by no means all subordinate to the main intelligence directorate (GRU). There are actually various types, including, for instance, engineer Spetsnaz, signal Spetsnaz, naval Spetsnaz, and so on. There are also other "special designation" troops called *osoboi naznachenie* (OSNAZ). Even the reconnaissance Spetsnaz in the combined arms formations and units below *front* are not directly subordinate to the GRU but are more like long-range reconnaissance patrol units for the parent division and army. Captain Hitchens is correct that these troops are not very elite, are mainly devoted to reconnaissance, and are not to be squandered on risky covert operations. On the other hand, he neglects to mention that the army and *front* reconnaissance directorates also have "apparat" departments that control agents who are in the covert operations

business. Nor does he mention that the deep espionage-type activities that Captain Campbell discusses are run by strategic units subordinated directly to the commander of the theater of strategic military activity (TVD) and general staff. Thus, while Spetsnaz units are doing many activities not related to espionage and sabotage, there are non-Spetsnaz folks who certainly are devoted to this. I certainly agree with him also that no Soviet officer having the length and type of service Suvorov claims can possibly know half of what he claims to know about virtually every arm and service of the Soviet armed forces.

At the same time, Captain Campbell is certainly correct in citing the various incidents and activities she does. Her information on Afghanistan is right, failing to mention only that the Soviet assault group was flown into the airport inside personnel carriers (BMPs), which were delivered by air under the cover story of military assistance equipment to an ally, and in which they remained hidden until ready to be used. Yet, in her entire paragraph of detailed description, she notes what kinds of military elements these people (and the forces in Czechoslovakia) were (not Spetsnaz) and then turns around in the final sentence and writes that "the Spetsnaz forces apparently were successful on all counts." You can't just call anyone engaged in these kinds of attacks Spetsnaz. The Soviets certainly don't.

Thus, I tend to agree with Captain Campbell that the threat to the NATO rear area is very real, but that is because it is coming from forces in addition to the Spetsnaz units Captain Hitchens correctly identifies. Actually, in my opinion, the most insidious threat to NATO forces is not even the direct-action groups but the massive intelligence capability this kind of deep-collection apparatus gives the Warsaw Pact. They don't need to waste time firing bullets when by reporting and directing really sizable firepower from air, artillery, and rocket forces, they can do far more damage—not to mention the intelligence they have already acquired during peacetime on every idiosyncrasy of our forces. Surely the net effect of all these "eyes and ears" is greater than the advantage we had in World War II with ULTRA. The confusion of roles and missions might even be a part of the Soviet "reflexive control" campaign.

John Sloan
Springfield, Virginia

MORE ON CAREERISM

I must take strong exception to Colonel Rigsbee's letter on careerism and the impact of "cultural assumptions" on the professionalism of the officer corps. To identify cultural assumptions—a series of attitudes and feelings ostensibly imprinted on one's character over the years—as the major cause of increased careerism (and decreased professionalism) is to offer a convenient excuse for the failure of leaders to lead and followers to follow.

Few would argue with Colonel Rigsbee's basic thesis that young officers come to us today with different values than such individuals had 20 years ago. But I submit that the differences are only in degree, not in kind. To state that our young officers are more careerist (and less professional) because they want "to do their own thing" or to blame "individualism" or "self-assertion" for increased careerism is simply ridiculous. I'm 43 years old, and I've "done my own thing" many times during an exciting Air Force career. And who of us hasn't tried to be an individual to some degree or to be a self-assertive leader or follower? These are negative aspects of careerism? I think not.

If we assume, as is the current trend, that professionalism of the officer corps—and for some reason we always seem to center on the *young* officers—is indeed in a state of decline, what do we do about it? Well we don't offer up pseudopsychological excuses, wring our collective hands, and cry that the problem is too tough to tackle. What do we do? We *lead* the young officers. Over the years I've had the privilege to command four aircraft/missile maintenance squadrons and to speak in seminars to hundreds of young officers, and I can assure you that intelligent, involved, enthusiastic leadership will do wonders to overcome "cultural assumptions." When our young officers are exposed to seniors who are concerned about them, who train them, who demand excellence, who do everything possible to make that young lieutenant or captain the best officer he or she can be, those young officers do respond, and they respond beyond your wildest expectations. They will water your bloody eyes! I've seen it! Our young officers are ready and willing to learn, to grow, to become more professional. All they need is a little help. Our young officers are a special group of people whose *basic values* are as appropriate today as they were 20 years ago. Let's not apologize for them; let's lead them.

Finally, Colonel Rigsbee refers to "lieutenant colonels striving for colonel and the colonels with stars in their eyes who thrash their troops 18 hours a day" for the most base, careerist reasons. This assertion is insulting to a large portion of the officer corps and fails sadly in two respects.

First, while there may well be lieutenant colonels and colonels who drive (but hardly ever "thrash!") their people for purely selfish, careerist reasons, the vast majority of officers push their people because it best serves both the unit mission and, believe it or not, the people themselves. Ours is a tough profession, one that often demands more than we readily want to give, and it is the job of the commander/leader to get this needed effort out of his or her troops. In almost every instance, strong *positive* leadership is all that is needed. But accomplishing the mission is what we're here for, and sometimes the officer in charge must make unpopular demands on subordinates. To imply that such actions stem from ulterior motives of self-advancement shows a childlike understanding of leadership and command. Further, I have yet to see individuals who did not grow personally and professionally when they were pressed to do more than they thought they could.

The second fallacy is the author's none-too-veiled suggestion that to seek or (dare I say it?) achieve personal success is a mortal sin. The author asserts that we should divorce from our hard-charging future leaders "their natural desire for a successful work experience (career)." Why? I don't know. The commissioning oath does not require us to become totally self-effacing, hair-shirt martyrs. Hopefully, the Air Force is a profession so structured and managed that when excellent work is performed, benefits accrue both to the service and to the individual. We all want to achieve some degree of personal success, and as long as the desire is a by-product of our efforts and not an end in itself, the desire to personally succeed is healthy and helpful—both to the Air Force as an organization and to individual Air Force members. Show me someone who doesn't enjoy the sweet smell of success, and I'll show you someone who won't succeed—and neither will his or her organization.

Our officers—both junior and senior—are bright, dedicated, concerned, and eager to learn and lead. "Cultural assumptions" may indeed be a problem, but a problem easily solved by anyone with the genuine desire to do so. "Cultural assumptions" as an excuse for weak professionalism? "Bravo Sierra!" say I—stronger message to follow.

Col Stephen C. Hall, USAF
Norfolk, Virginia

Maj Michael Mosier's article "Getting a Grip on Careerism" in the Summer 1988 issue of *Airpower Journal* was interesting indeed. Even more disturbing was Colonel Rigsbee's response in the Winter issue.

Interchangeability of the words *duty* and *obligation* is the first problem glaring out of Colonel Rigsbee's letter. An obligation is a commitment taken freely by choice, while duty is required by the very nature of existence. Both writers seem to mix these words up, leaving them with erroneous assumptions. Both men profess that in order for men and women to commit themselves to a course of action, they must place duty over self, when, in fact, it is simply a matter of obligation. Your word is your bond. We all take an oath of office in which we commit ourselves to a course of action. We are not born with some sort of natural state of fealty. That went out with monarchies. On what does Colonel Rigsbee blame the loss of direction in today's officer corps? Incorrect values?

Colonel Rigsbee identified "bad" societal concepts that he felt the major had left out. The colonel lists the concepts "do your own thing, be your own man or woman, individualism, self-assertion, what's in it for me?" Unbelievable! Next they will want to pursue their own happiness! I won't profess to comment on the rightness or wrongness of the youth movements of the 1960s and 1970s—only on Colonel Rigsbee's definition of the problem.

Our country was founded on the concept of individualism. Self-assertion and self-protection are ingrained in our Bill of Rights. These rights are not given up with military oaths of office. Obviously, these individualistic tendencies that the colonel identifies are not the problem; neither are they bad.

Colonel Rigsbee feels that we must steer our children away from these values of individualism and that they must not place their views over those of their peers. Alienation of self is nothing new; it is straight out of the confused minds of Immanuel Kant, John Rawls, and Karl Marx.

Colonel Rigsbee is, like all of us, a product of

American society and its corresponding educational institutions. We have been under the influence of Rawls and Kant for many years now, and it has resulted in numerous changes to our society. Phrases like *common good*, *common needs*, and *economic rights* abound today in both society and politics. The colonel's statements are just one example of the confusion that can occur when philosophy allows for the mixing of words like *duty* and *obligation*. But laying all this aside, what is the reason behind careerism? It isn't a matter of duty over self. It is simply a system, like most others, I might add, that encourages a network of associations. The more people you know, the better assignment you get, and the more people you know. The Air Force does not discourage this or ask anything different of us. It is not a loss of sense of duty, because there is none. It is not even a failure to meet obligations, because we don't promise not to employ the system. Careerism simply exists because the system, like all others, encourages it. The question is, will the absence of many top slots keep the crème from rising?

1Lt Michael K. Donaldson, USAF
RAF Lakenheath, England

ON JOINT OPERATIONS

With regard to Col Dennis M. Drew's excellent article on joint operations in the Fall 1988 *Airpower Journal*, I feel a few comments are necessary. He did a great job in describing the historical differences between the services, and I urge members of all services to read this. Understanding these differences is the key to making joint operations work for all of us. I think what he pointed out was that no one service can stand alone, as much as our egos would like to think so. Quite the contrary, we are a tripod that must depend on the other two legs to stand. If we lose one leg, we have lost the war.

Most important, I fully agree with his assertion that the answer to making this thing we call "joint ops" work is to study history. While many understand this, much is still to be done at all levels of the defense community. And while we study the histories of past conflicts, let us remember that the lessons learned by one person are not the same lessons learned by someone else. The interpretations vary. What I learned from studying World War II is not the same as what Colonel Drew learned, for instance.

I do not find it clear that our strategic bombardment of Germany was a decisive factor in the Allied victory. We saw that quite the contrary was true after the war, when the condition of Germany's industry proved to be at nearly full production. It would have been more decisive to use Allied assets more directly in conjunction with the ground forces. Too frequently, the air forces had to be begged or forced to provide the air support that the ground forces conceded was necessary for the successful completion of their campaign. All the strategic bombing of Germany did was to kill a lot of civilians, demolish housing, and anger the civilian population. I do concede that strategic bombing was helpful but not as important as many would suggest. This bombing did nothing to stop the German ground forces. What did have direct impact was the use of tactical aviation by the Allies. And when it was not available, the results on the ground were noticeable.

Let me take the Normandy invasion as an example. The successful implementation of the Zuckerman Plan by now-retired Lt Gen Elwood Quesada had a direct impact on our forces by not allowing the German reinforcements to move past a line of rail bridges running north and northwest through France and Belgium. This gave our forces plenty of time to deal with the local opposition. Furthermore, the Allies' air forces dominated the skies over the battle, a well-known fact. Had the follow-on forces been allowed to move to the beaches and had the German fighters been more of a force, we might now be reading about a complete disaster on the beaches of Normandy.

With regard to Colonel Drew's recommendation to devise new programs of military history, I feel that this should be expanded to include the noncommissioned officer (NCO) corps at the senior NCO level. True, the officers require these programs the most, but normally the NCOs personally lead our people. An understanding of the past will help NCOs lead their people in the future.

We at Supreme Headquarters Allied Powers Europe (SHAPE) have recently formed the SHAPE Military History Society exactly for the reasons put forth by Colonel Drew. Our program is prepared to ensure the study of all aspects of military warfare on land, in air, and at sea. Our members are from all the services, officer and enlisted, and from most of the 16 nations of NATO, which can make for some pretty interesting discussions. Our big events of 1988 were a

symposium on the Normandy invasion and discovering what lessons we can learn with regard to our current plans for attacking follow-on forces (FOFA). Yes, there are many things to learn from this study. To reemphasize Colonel Drew's comment on "great captains" being students of military history, Gen John Galvin, supreme allied commander Europe (SACEUR), spent the entire day at our Normandy symposium and is the society's patron. Enough said.

Again, I salute Colonel Drew for an excellent article and suggest to all who missed it to dig it out and plan for the future by following his suggestions.

CPO J. L. Anderson, USN
SHAPE, Belgium

FROM THE LATIN AMERICAN EDITION

Editor's Note: The following letter is translated from Spanish. The comments are on two articles that appeared in the Summer 1987 issue of Airpower Journal, *which were subsequently translated and published in the Spanish language edition of* Airpower Journal.

Through the kindness of your Air Force representative here, I received a copy of your March 1988 Spanish issue. I have closely read the articles by Col Clifford R. Krieger ("Fighting the Air War: A Wing Commander's Perspective") and Lt Col Price T. Bingham ("Fighting From the Air Base"). I have been involved in air base ground defense for 25 years and would like to offer some comments pertinent to both articles.

In general, air bases are threatened by the following: attack by commandos from the air or on the ground; attack by heliborne or airborne infantry, armored groups, or artillery; attack by saboteurs or spies; and attack by other means, such as missiles, remotely piloted vehicles (RPVs), or special weapons.

I agree with both authors that the Spetsnaz threat in Europe is significant, given the firepower of a Spetsnaz group of 27 troops equipped with three Hind attack helicopters and the possibility of at least a brigade of Spetsnaz forces stationed in East Germany configured for airfield attack.

The air base is fixed, and its key facilities are easily identified during peacetime for future targeting. We must also consider that aircraft, each worth millions of dollars, may be fearsome

in the air but can be destroyed on the ground by a weapon costing only a few thousand dollars. If attacking commandos know what they are doing, they will attack at night, targeting simultaneously or successively the following key objectives: (1) aircrews and groundcrews; (2) aircraft on the ground; (3) command posts; ammunition dumps; petroleum, oil and lubricants (POL); and antiaircraft defenses; and (4) radars, communications, and navigation aids.

Main operating bases tend to become "country clubs," and this increases their vulnerability. Even in the United States, an air base could be successfully attacked by commandos in the following manner. "Fully Americanized" commandos of both sexes might rendezvous at sites where weapons—principally grenade launchers—have been previously cached. Dressed in plain overalls adorned with only the national insignia to provide protection under the Geneva Convention, they could strike their blow and then melt back into the civilian population.

How do we defend ourselves against any of the threats identified above? Above all, we must have organic defense forces because the army, unfortunately, will send its best units to the front since our defense is only a secondary task for them. With respect to the organization of these defense forces, consider that the standard mechanized infantry or marine battalion is a "general-purpose" force with a myriad of combat missions, while we need a strongly defensive element. The base-defense mission should be accomplished through mobile defensive maneuvers and aggressive patrolling. Our defense force should be capable of operating up to 40 or 50 kilometers from the air base in all weather conditions and should be equipped with heavy antitank and antiaircraft weapons (relying on shoulder-fired surface-to-air missiles—SAMs—for self-defense), and target-detection and tracking equipment. For self-protection from ground attack, the defense force should rely on mobility, firepower, and security. The ground defense personnel must be well prepared for combat and constantly vigilant.

The use of combat helicopters for base defense needs a few words. They can be effective in defending the air base, but they are costly ($8–$10 million apiece) and highly vulnerable. Given that an armored fighting vehicle (AFV) costs only $.5 million, I feel we could more effectively use AFVs in base defense, substituting them for the helicopter's capabilities on a

ratio of 2 to 1 or 4 to 1, respectively.

One final thought. I believe we should assume that if our own front is broken, the air base cannot be successfully defended and the base commander must always be prepared for the evacuation of personnel and the destruction of its facilities.

Comodoro Francisco Lopez Sandivares
Cordoba, Argentina

MISREADING CLAUSEWITZ?

In his Winter 1988 *Airpower Journal* article "Clausewitz and the Indirect Approach: Misreading the Master," Capt Kenneth L. Davidson reflects the widely held attitude that Clausewitz, whom he calls "the Master," was the inerrant authority on military affairs—the ultimate, unchallengeable fount of military wisdom. Holding such high regard for Clausewitz (who, by the way, never himself made any claims of infallibility), Davidson assumes that any alleged shortcomings or flaws in Clausewitz's thinking must be illusory, more than the result of misunderstandings. Davidson hits B. H. Liddell Hart for "misreading" Clausewitz and claims that Liddell Hart actually agreed with Clausewitz but didn't know it and—what I find astonishing— that Clausewitz was actually an advocate of the indirect approach to war that Liddell Hart advocated.

To Davidson and others who regard Clausewitz as the unassailable military guru, I offer the observations of the renowned British military authority Maj Gen J. F. C. Fuller. In chapter 4 of his book *The Conduct of War: 1789–1961*, Fuller noted, "In spite of his twenty years' experience of Napoleonic warfare, Clausewitz had but a vague understanding of it," and "When it is borne in mind that Clausewitz not only lived throughout the Napoleonic Wars but also took part in the campaigns of 1806, 1812, 1813 and 1815, it is astonishing that he paid so little attention to Napoleon's generalship." Fuller remarked that Clausewitz did not comprehend Napoleon's reason for securing his rear, that Napoleon in practice did not follow Clausewitz's maxim, "There is no more imperative and no simpler law for strategy than to *keep the forces concentrated*. No portion is to be separated from the main body." Instead, as Fuller observed, "Napoleon frequently sought to trap his enemy by dividing his army. Instead of

keeping it concentrated to cover his line of communications, as Clausewitz would have done, he split it into three or more widely spaced columns." Fuller noted, "That Clausewitz, who took part in the Jena campaign—its most notable example—was completely ignorant of this flexible method of concentration, as opposed to his own rigid method, is proved."

In his article, Davidson claims that Clausewitz was influenced by his experiences in Napoleonic warfare. Since Clausewitz's appreciation and understanding of Napoleonic warfare were seriously defective, obviously his military thinking should be regarded with skepticism rather than as unquestionable gospel.

Napoleonic warfare demonstrated that frontal pressure was rarely decisive. Yet Clausewitz stressed direct frontal attacks and disparaged flank and rear attacks as detracting from the effectiveness of the frontal attacks, and best used only in following up a decision already achieved by frontal attack.

When he claims that Clausewitz was actually an advocate of the concept of indirect approach propounded by Liddell Hart, Davidson demonstrates that he (1) doesn't understand what Liddell Hart meant by indirect approach and (2) doesn't understand Clausewitz's ideas about how to fight.

By indirect approach, Liddell Hart meant attacking at points of least expectation and least resistance—quite different from the simple, direct frontal attacks advocated by Clausewitz. Liddell Hart also advocated lines of operations that offer alternative objectives. He called this putting the opponent on the "horns of a dilemma" by forcing him to spread his forces to defend more than one area or spot. Liddell Hart regarded it as unwise to threaten more than one objective since once the enemy is certain of your aim, he can concentrate to thwart you.

Davidson insists that in advocating attacking what he called the enemy's center of gravity (*centra gravitatis*), Clausewitz was essentially advocating Liddell Hart's technique of indirect approach. But we find Davidson is incorrect if we examine what Clausewitz actually said about his center of gravity concept in *On War*, volume 2, book 6, chapter 27, section 7. Therein, Clausewitz said, "Centers of gravity are situated where the greatest bodies of troops are assembled," and asserted, "The blow which, if successful, will produce the greatest effect, must be made against that part of the country where the greatest number of the enemy's forces are collected

together." This advocacy of attacking where the enemy's power of resistance is greatest is quite the opposite of Liddell Hart's advocacy of attacking the enemy where he has the least power of resistance.

Clausewitz asserted that the enemy's military force was to be regarded as "a unity which may be reduced to one center of gravity. At this center of gravity the decision must take place." This concept is quite different from Liddell Hart's advocacy of alternative objectives.

The Clausewitzian concept of center of gravity is very seriously defective, and it is quite different from Liddell Hart's indirect approach. Captain Davidson evidently has only a superficial

familiarity with the writings of both Clausewitz and Liddell Hart.

Joseph Forbes
Pittsburgh, Pennsylvania

ON A MAGNIFICENT STAFF

Your editorial ("A Magnificent Staff," Spring 1989) really hit home. Having worked the past two years as an administrator in the wing command section, I find that it is very easy to get tunnel vision. I sense that I speak for countless other "staffers." Hopefully, commanders with your insight will incorporate innovative ideas to show the "big picture."

SSgt Tharmon R. Wynn, USAF
Little Rock AFB, Arkansas

net assessment

Low-Intensity Conflict in the Third World by Dr Lewis B. Ware et al. Maxwell AFB, Alabama 36112: Air University Press, 1988, 178 pages, $7.50.

The term *low-intensity conflict* (LIC) has gone from avant-garde to buzzword and now approaches cliché yet still lacks a concise definition that encompasses the phenomenon. To view it as a "limited struggle," which is the underlying premise of the Department of Defense definition, is to ignore the "unlimited" nature of most movements. Defining it as something less than war, however, discounts the potential political outcomes of the process. Therefore, any work that attempts to explain the subject without first establishing an operational construct will itself lack focus.

The authors, members of the Political-Military Affairs Division of the Airpower Research Institute, provide such a focus in their premise that LIC is a culturally shaped reaction to an existing political situation. Although the spectrum of LIC response has identifiable categories like terrorism and insurgency, they posit that responses should be keyed to regions rather than levels. That is, terrorism and insurgency in a particular region have more in common than

that insurgency would have with an insurgency in another region. They address case studies from Central Asia, the Middle East, Southeast Asia, Latin America, and sub-Saharan Africa to support this thesis.

Using situations as diverse as the 1929 Basmachi insurgency and the ongoing dispute between Angola and South Africa, they argue that "the bilateral relationship between the United States and the Soviet Union continues to dominate American foreign and regional policies." On the surface, this thesis appears to be borne out, as is the premise of culturally based determinants. However, the support for these contentions is generally limited to between two to five pages of greatly condensed political, economic, and ideological history of the LIC for each of the 19 case studies. The complex interrelationships of the variables involved are not well served by such brevity.

Readers unfamiliar with LIC will find the book a helpful overview in that it provides a well-ordered explanation of the political and cultural factors that influence LIC. However, experienced individuals will find it less useful because of the emphasis on breadth at the expense of depth.

Lt Col Thomas M. Kearney, USAF
Headquarters USAF, Washington, D.C.

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School for Advanced Airpower Studies

Air University is preparing final recommendations for the Air Staff on the formation of the School for Advanced Airpower Studies (SAAS) at Maxwell AFB, Alabama. The objective of the school is to develop strategists for the US Air Force. The emphasis will be on the aerial aspects of the operational art of war. Course content includes military theory, deterrence and national policy, strategic operations, arms control, and strategic defense. Other topics include air campaigns and joint campaigns, technology and innovation in air power, wargaming and exercises. Approximately 25 students from a wide variety of career fields will be competitively selected each year to attend the one-year school after completion of Air Command and Staff College (ACSC). Details on how to apply for the SAAS will be sent to each ACSC selectee following notification of selection for in-residence attendance. Follow-on assignments will be mainly to joint and unified commands, Headquarters USAF, and major air command headquarters. Inquiries, comments, and suggestions for the program should be directed to CADRE/AS, Building 1400, Maxwell AFB AL 36112-5532.

USAFA Instructor Opportunities

The Military Studies Division at the United States Air Force Academy is seeking highly qualified officers for instructor duty in the summer of 1990 and beyond. This duty involves teaching and motivating cadets in university-level courses stressing air power heritage, the art of war, military theory, doctrine, and force employment. Officers holding bachelor's and/or master's degrees in history, military history, political science, international relations, or Soviet studies are encouraged to apply. The division can sponsor a few highly qualified applicants with the appropriate background for a master's degree through the Air Force Institute of Technology (AFIT) program, with a follow-on assignment to the Military Studies Division. Interested individuals should contact Capt Robert Angwin, Headquarters US Air Force Academy, Colorado 80840-5421, AUTOVON 259-3257/3248.

Historical Research Center Grants

The United States Air Force Historical Research Center (USAFHRC) has announced the availability of research grants to encourage scholars to study the history of air power through the use of the US Air Force historical document collection at the Historical Research Center, located at Maxwell AFB, Alabama. Grants of up to $2,500 are available for qualified applicants who will visit the center for research during fiscal year 1990. Applicants must have either a graduate degree in history or related fields or equivalent scholarly accomplishments. Their specialty should be in aeronautics, astronautics, or other military-related areas. A wide variety of military-related topics may be covered in the proposed research. Preference will be given to those proposals that involve the use of primary sources held at the center. Applicants may request an application from the commander, US Air Force Historical Research Center, Maxwell AFB AL 36112-6678. The deadline for submission of applications is 31 December 1989.

Medical Career Opportunities in the Military

The Uniformed Services University of the Health Sciences in Bethesda, Maryland, is seeking qualified applicants to attend the medical school and graduate programs in health sciences. Medical students are commissioned as second lieutenants on active duty reserve status while in school and receive full pay and benefits. Upon graduation they are promoted to the rank of captain. There are no fees or tuition for the school. Upon graduation, students serve a seven-year commitment for the training they receive. Anyone, civilian or military, with a bachelor's degree may apply for the program. The graduate programs lead to both master's degrees and PhDs in basic sciences. Civilian applicants serve as teaching and research assistants to the faculty in exchange for their tuition-free education. For more information contact the Office of Admissions, Attn: PAC, Uniformed Services University, 4301 Jones Bridge Road, Bethesda MD 20814-4799, or call (202) 295-3103.

Maj Gen Perry M. Smith, USAF, Retired (USMA; PhD, Columbia University), is general editor for Pergamon-Brassey's series on future warfare. During his 30-year service in the US Air Force, he commanded the F-15 wing at Bitburg, West Germany; was the director of plans on the Air Staff; and served as commandant of the National War College, of which he is a graduate. General Smith is the author of *Creating Strategic Vision: Long Range Planning for National Security, Taking Charge: Making the Right Choices,* and *Assignment Pentagon: The Insider's Guide to the Potomac Puzzle Palace.*

Wing Comdr Brian L. Kavanagh is on special assignment from the chief of the Air Staff of the Royal Australian Air Force (RAAF) to write air power doctrine. He has held command positions, has worked with the US Air Force in the Joint Defence Space Communications Station at Nurrungar, Australia, and has flown several tours on maritime aircraft, including the P-3 Orion. Wing Commander Kavanagh is a graduate of the USAF Air War College and the Royal Australian Navy Staff College.

Maj Earl H. Tilford, Jr. (BA and MA University of Alabama; PhD, George Washington University), is a research fellow at the Air University Center for Aerospace Doctrine, Research, and Education (AUCADRE), Maxwell AFB, Alabama. Previous assignments have included the Office of Air Force History and editor, *Air University Review.* He is the author of *A History of Air Force Search and Rescue in Southeast Asia, 1961–1975* and is currently working on a book tentatively titled "Setup: What the Air Force Did in Vietnam, and Why."

Wing Comdr David J. Schubert (BSc, Melbourne University) is on special assignment from the chief of the Air Staff of the Royal Australian Air Force (RAAF) to write air power doctrine. He has had flying tours as a navigator on P-3 Orion aircraft and was an instructor navigator and operations officer at navigation school. Wing Commander Schubert is a graduate of the USAF Air War College and the RAAF Academy.

Cadet First Class Steven A. Parker is a member of the class of 1989 of the United States Air Force Academy, assigned to Cadet Squadron 20. Prior to entering the Academy, he served as a precision measurement equipment specialist at Laughlin AFB, Texas, and attended the US Air Force Academy Preparatory School.

Brig Gen Billy M. Knowles, Sr., USAF, Retired (Texas A&M, University of Houston, University of Southern California), is a command pilot with over 8,000 flying hours spanning 38 years. His assignments included chief of flight operations, C-130 combat crew training school; director of operations, Headquarters Air Force Reserve; and wing commander. General Knowles is a previous contributor to the *Airpower Journal.*

Maj Michael W. Cannon, USA (USMA; MA, University of Iowa) is a student at the School for Advanced Military Studies, Fort Leavenworth, Kansas. He has served with the 11th and 3d Armored Cavalry Regiments in West Germany and Texas, respectively, and most recently was assistant professor of history at the United States Military Academy. Major Cannon is a graduate of the Command and General Staff College.

Maj Franklin J. Hillson (BA, Virginia Military Institute; MA, College of William and Mary) is on a joint-duty assignment with the Joint Tactical Command, Control and Communications Agency at Fort Monmouth, New Jersey. He is an air weapons controller, having served tours in Canada, West Germany, and the United States. Major Hillson is a graduate of Squadron Officer School and Air Command and Staff College.

Autumn Readings

- Air Base Defense
- Kenney in the Pacific
- Wartime Manpower

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